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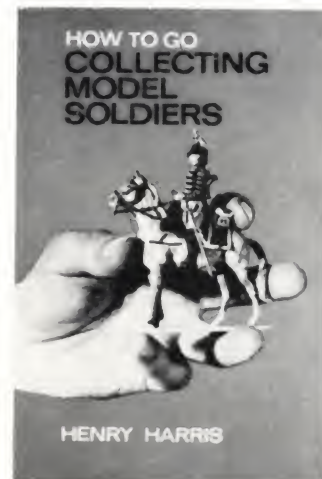
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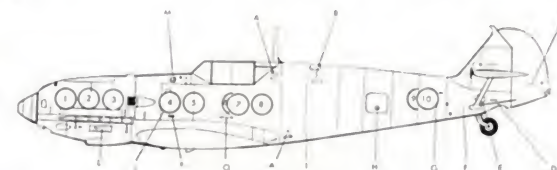
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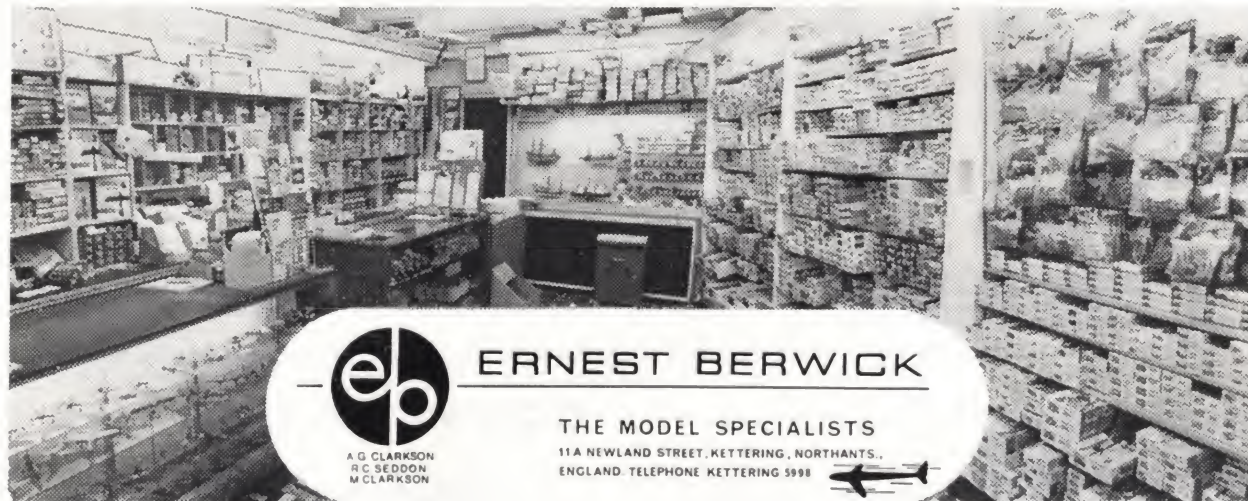
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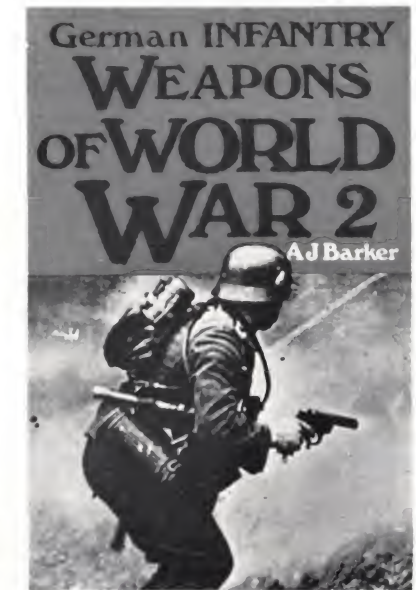
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AIRFIX magazine FOR PLASTIC MODELLERS

July 1969

Volume 10 No 11

Editor Chris Ellis

Cover Picture

Now in service with No 1 Sqn RAF at Wittering and in full production by Hawker Siddeley at Kingston, the Harrier looks set to emulate its predecessor, the Hunter, as a versatile ground attack aircraft with years of service ahead of it in both RAF and foreign hands. This painting depicts two production aircraft in standard RAF finish on a training exercise from Boscombe Down where the type was evaluated by A & AEE. The typical ordnance load illustrated consists of two 30 mm Aden cannon in fairings beneath the fuselage, a Matra 155 rocket pod on each outer wing pylon with 1,000 lb HE bombs on the inner pylons, and a reconnaissance pod on the fuselage pylon. An Airfix 1:72 scale kit of the Harrier is due for release later.

(Painting by Richard E. Gardner)

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WHAT do you know about Swissair? . . . Switzerland's national airline, one of the principal carriers in Europe, operating DC-8s, DC-9s, Caravelles and Coronados . . . yes. But there is much more to it than that as I discovered recently when I visited Swissair's Headquarters in Zurich.

Like many readers I have logged Swissair aircraft in and out of London Airport for many years. I have travelled with them on several occasions and have found that their service and reliability can be envied by many another airline. One of the reasons for this must surely be that Swissair, although the national airline of Switzerland, is one of the few privately controlled airlines in Europe. The Swiss Government has only thirty per cent of the shares in the company, the rest belong to large and small investors and because of this, Swissair have to make an annual profit. Whilst other national airlines get into the red, Swissair had a profit of £2,641,000 last year and an operating surplus of £13.4 million.

Here are a few more facts and figures. In 1968 Swissair carried 3,059,769 passengers. It had 3,232 passenger seats available on its thirty four aircraft. The network of services extends over 172,567 kilometres linking 72 cities in 52 countries covering all of the continents of the world apart from Australia. What is more, passenger figures are rapidly increasing and by 1974 could well have doubled.

During my visit I was introduced to Mr W. Benz, the Commercial Planning and Traffic Manager of Swissair who is the man responsible for looking into the future as far as his company



Top: Ex-Swissair DC-3 HB-IRC was used for training purposes until recently by Schweizerische Luftverkehrsschule (SLS). **Above:** Piaggio P.149 HB-EBW, one of the basic training aircraft used by SLS at Hausen. These aircraft have recently been joined by a number of Italian SIAT 223 Flamingoes.

s concerned. I found that he had some very shrewd ideas of what the average airline passenger wants today and some strong views on the way in which his airline will satisfy these needs in the coming decade. Not for him the glamour of supersonic travel. His idea is smaller aircraft with greater comfort but at an increased frequency so that the businessmen or holiday maker can rely on getting a seat into or out of Switzerland's four major airports 'on the hour—every hour, at least on the high density routes. We cannot afford prestige aircraft in Swissair' he told me.

To operate the supersonic transport, whether it be the Concorde or the American SST is almost out of the question for Swissair as it has not got the range to get from Zurich direct to New York and even if it had there would be a large sector of its journey to be completed at subsonic speeds in highly congested air space which would not provide the 'out and back in a day' journey on which other airlines are proposing to sell Concorde to the European businessman. This did not mean to say that Swissair was not considering supersonic transports. Although it may seem to lag behind other European carriers in this respect, all of its operations are tied up with profit making. There is no Government subsidy to operate prestige routes or help out in



Top: The introduction of the Lockheed Orion on Swissair's Zurich-Vienna route before the war cut almost an hour off the journey. It was the first American type of aircraft to be used by European airlines and had a colour scheme of overall red with white cheat line and lettering (Swissair Photo AG). **Above:** By contrast, one of the current Swissair fleet of DC-8-62s, HB-1DF.

times of financial difficulty. Swissair's profitable operations figured largely in everything I heard and saw at Zurich. From the planning of servicing to the training of aircrew everything depended on keeping costs at an economic level.

Asked about future equipment, Mr Benz said that Swissair had ordered two Boeing 747Bs and that they were actively considering the purchase of the DC-10 (as is now confirmed). After delivery the jumbo jets would operate 12 services weekly across the North Atlantic but more Boeing 747s may be on the order books later after the economics of the operation had been thoroughly investigated.

Tracing Swissair's History

Civil aviation in Switzerland had its beginnings in January 1919 when a Swiss Air Force Officer set up an air service between Zurich and Berne. In the same year three private air transport companies were formed, one of which was the Aero-Gesellschaft Comte, Mittelholzer and Company. Another was Frick and Co, and it was these two that formed the Ad Astra Swiss Air Transport Company with a capital of three hundred thousand francs in February 1920. The joint fleet of aircraft



Top: Another Swissair first. One of the stewardesses employed by the company on their Condor aircraft (seen behind) on the route to Berlin. **Above:** One of the Fokker F.VIIa aircraft which were the mainstay of the Swissair pre-war routes before the introduction of the Orion and DC-2. One of these aircraft is to be preserved in the Swiss national Transport Museum (Swissair Photo AG).

numbered sixteen but with air transport being in its infancy, profits were hard to come by.

In 1925 a second air transport company was founded in Basle known as Balair. Subsequently the two companies merged and on March 26 1931 Swissair was formed. It owned eight three engined Fokker F.VIIb, two single engined Dornier-Merkur, one single engined Fokker F.VIIa, a single engined Messerschmitt M-18d and a single engined Comte AC-4, totalling eighty-six passenger seats. The aircrew comprised ten pilots, seven radio operators and eight flight engineers. Operations were carried out only in the Summer months and then only under favourable weather conditions. The route network totalled 2,800 miles and at the end of 1931 Swissair's staff totalled sixty-four.

In the middle of April 1932, Swissair became the first European carrier to start operating aircraft built in America. These were Lockheed Orions and caused quite a sensation by having a cruising speed of 162 miles per hour which was considerably more than any other aircraft in use. A twin engined American Curtiss Condor was purchased with room for fifteen passengers and used on the Zurich to Berlin route. To look after what was, at that time, a large number of passengers on board, Swissair employed the first stewardesses to be used by any European carrier.

In 1935 the Company was amongst the first airlines to operate fourteen-seater twin-engined Douglas DC-2s. With these Swissair in consortium with Imperial Airways set up a link between Zurich and London via Basle, carrying for the first time



One of Swissair's DC-3s at Zurich (Dübendorf) where Zurich airport was located until 1948. Dübendorf is still a busy airfield, but for military aircraft only (Swissair Photo AG).

the white cross on the red field, which became the airline's national insignia, across the sea on a scheduled service. Services now continued throughout the winter months and it was not long before Swissair bought the first of their fabulous DC-3s. This period saw the beginnings of Swissair's long association with the firm of Douglas in America which has been continued to this day.

At the beginning of the second world war, Swissair suspended its regular services. At that time the fleet consisted of five Douglas DC-3s, three Douglas DC-2s, the prototype Dragon Rapide, a Fokker F.VIIa and a Comte AC-4.

Services resumed six years later on July 30 1945 and in the following year Swissair ordered its first DC-4 four-engined aircraft for transatlantic operation.

In February 1947 Swissair became officially the national airline of Switzerland with some state participation. The Government took over thirty per cent of the share capital, a proportion which has never changed. The association however was to prove useful as in 1949 with the devaluation of sterling, Swissair suffered a considerable decline in traffic revenue. The need to replace their existing four-engined fleet was helped by Federal aid amounting to fifteen million francs with which two Douglas DC-6Bs were purchased. Later this was paid back and a third DC-6B was ordered in January 1951. Eventually six of these aircraft were put in service. Since then Swissair has drawn no subsidies from the Government, enjoys no fiscal privileges and pays the same taxes and fees as foreign carriers do at Swiss airports.



Mainstay of Swissair's Middle and Far East routes is the Convair CV990A Coronado. Here HB-ICC is seen over the Alps.

To modernize the medium haul fleet Swissair purchased seven Convair 240s and retired their remaining DC-3s to the training role. Eleven Convair 440 Metropolitans were delivered by June 1957 and the long haul fleet was supplemented by DC-7Cs.

In the Autumn of 1955 the first orders for pure jet airliners were placed in America. This, among the world's air carriers became the starting signal for a veritable race to maintain their competitive position. Swissair, which meanwhile had gained rank and reputation as an intercontinental carrier could not refuse to participate in this new development. A refusal of this kind would have meant disappearance from world-wide operations within a few years. Realising this fact, and encouraged by the favourable operating results hitherto achieved, Swissair ordered two Douglas DC-8 jet liners on January 30 1956 and increased the order to three later that year. The order was up to four in 1962 and the first was delivered in August 1960. Since that date all transatlantic crossings have been carried out by DC-8s. A fourth DC-8 equipped with fan engines, was delivered in October 1963.

In 1958, a co-operation agreement was signed in Zurich between Swissair and Scandinavian Airlines System (SAS). On the same day Swissair decided to order five Convair 880 jets and subsequently changed this to seven Convair 990 Coronados. Two of the Coronados were leased to SAS and in return SAS

Continued on next page

In the Air—continued

leased four Caravelle jets to Swissair in the Summer of 1960; these Caravelles were taken over by Swissair in April 1965. Four additional Caravelles were ordered and five of the Coronados were delivered in 1962. A sixth aircraft of this type joined the fleet in 1964. Both SAS and Swissair agreed to organise jointly the maintenance of their jet fleets which enabled Swissair and SAS to operate from 1960-61 a modern highly competitive jet fleet. At the same time overhaul and maintenance problems have been radically simplified. Owing to this co-operation, investment in equipment has been smaller than if each company acted separately. The co-operation continues with regard to DC-8 and DC-9 equipment and more recently KLM have joined the consortium.

Routes throughout the world were extended, the DC-8s went to Montreal, Canada and South America, terminating at Santiago and in the Far East a service to Tokio, originally opened in 1957 with DC-6Bs, is now flown four times weekly by Coronados and will shortly be operated by DC-8-62s. Another Far East service goes to Colombo and Singapore. Moscow was added to the Warsaw service and a number of other European destinations increased Swissair's traffic routes throughout the world.

In order to make Swissair into an all-jet airline, an order was placed in May 1964 for ten short-range DC-9 aircraft. The order was later increased to 18 and it was decided to have the stretched version—the '32' to replace the Metropolitans. Swissair was the third European carrier after BOAC and TAP to operate an all-jet fleet. The first DC-9s arrived in 1966 but delays in deliveries made Swissair 'wet-lease' a BAC-111 jet from British Eagle International to see them over the period before their own aircraft arrived. The long haul fleet was further enlarged in 1967 and 1968 by the addition of four DC-8-62s; HB-IDG was delivered on February 23, 1968 and HB-IDH arrived on July 20. Of the last two, HB-IDH is a DC-8-62F carrying seven pallets of cargo and 80 economy class passengers. Swissair now has 12,400 people employed of whom about 2,200 work in over one hundred branch offices outside Switzerland. In terms of turnover Swissair is the twelfth largest enterprise in Switzerland.

Most recent Swissair development is the announcement that it is to participate with other major consortium airlines in buying 36 DC-10s in a joint deal in which Swissair will maintain DC-10 (and DC-9) airframes for the whole group with KLM looking after engines. First DC-10 deliveries are scheduled for 1972 and each aircraft (with spares) will cost £8.3 million each. The Swissair version will carry 253 passengers and 15 tons of cargo.

Caravelle HB-ICS (background) and one of Swissair's recently acquired DC-9-32s on the hardstanding at Zurich airport.



HB-IFX one of the 16 DC-9-32s operated by Swissair. Another aircraft of this type and a freighter version are still awaiting delivery before the fleet is complete.

Training in English

During my visit I spent some time in the Training Headquarters of Schweiz Luftverkehrs Schule from which Swissair draws all its aircrew. Applicants start at seventeen years old with a two-week course. Some three hundred enter every year and selection is made progressively on short courses during the years that follow. The military services take many of the potential pilots but eventually some fifty new aircrew are required by Swissair every year.

All of the training is done in English. And the school has its own workshop for producing the most complicated electronic training aids. Teaching methods are of the most modern based on the popular language laboratory style of instruction. Also in the building were the flight simulators which are kept very busily employed.

The training base is at Hausen but SLS have a hangar on Zurich Airport in which I saw a Bolkow 207, a Piaggio P149E and one of the recently acquired SIAT 223 Flamingoes. Parked in the corner of the hangar was a Buckler Jungmann which was previously used for aerobatic training, but like the Tiger Moth has given way to more modern low winged monoplanes.

From all that I saw during my stay in Switzerland it was obvious that Swissair is determined in the interests of national economy and the tourist trade to do everything possible to secure for Switzerland full participation in the modern world air traffic routes, but at a profit. There is no doubt that its Board of Directors, which includes some of the best known names amongst bankers and Swiss industrialists, will ensure that this consolidation and expansion will continue in the years to come.

SWISSAIR FLEET

April 1, 1969

Douglas DC-8-62
HB-IDE Genève
HB-IDF Zürich
HB-IDG Neuchâtel

Douglas DC-8-62F
HB-IDH Piz Bernina

Douglas DC-9-32
HB-IFF Fribourg
HB-IFG Valais
HB-IFH Opfikon
HB-IFI Zug
HB-IFK Kloten
HB-IFL Appenzell I.Rh.
HB-IFM Thurgau
HB-IFX Lausanne
HB-IFY Bellinzona
HB-IFN Obwalden
HB-IFO Appenzell A.Rh.
HB-IFP Glarus
HB-IFR Ticino
HB-IFS Grisons
HB-IFT Rümliang
HB-IFU Chur

Fokker F-27-200 Friendship
(owned by Swissair, serviced by Balair, operated by Balair on behalf of Swissair)
HB-AAV
HB-AAW
HB-AAX

Convair 990 Coronado
HB-ICA Bern
HB-ICB Luzern
HB-ICC St. Gallen
HB-ICD Basel-Land
HB-ICE Vaud
HB-ICF Schaffhausen
HB-ICG Winterthur

SE-210 Caravelle
HB-ICS Uri
HB-ICT Schwyz
HB-ICU Aargau

Douglas DC-8-53
HB-IDD Basel-Stadt
HB-IDD Nidwalden

On order
2 B-747 B (HB-IGA-IGB)
2 DC-8-62 (HB-ID-IDL)
1 DC-8-62F (HB-IDK)
1 DC-9-32 (HB-IFV)
1 DC-9-33F (HB-IFW)
DC-10s (part of joint order for 36 aircraft)

NEW BOOKS

REVIEWED FOR MODELLERS

German fighter aces

HORRIDO, FIGHTER ACES OF THE LUFTWAFFE, by Trevor J. Constable and Raymond F. Tolliver. Published by Arthur Barker Ltd, 5 Winsley Street, London, W1. Price 50s.

THE 'Bandits, Tally Ho' of the Luftwaffe—Horrido—is an apt title for any book dealing with the combat histories of German fighter pilots. The confirmation, or lack of it, of the numbers of Allied aircraft which this small band destroyed during the course of the War has long been the subject of controversy.

Edward H. Simm's book, *The Fighter Pilots*, went a long way in detailing the accuracy of German pilots' claims, this new work considers the subject in greater depth than any yet published in the English language. Many of the leading German pilots, their experiences, motivations and post war careers are catalogued in detail, whilst a 20 page 'partial list' of Luftwaffe fighter 'aces', their decorations, units and total 'kills' is included in the index.

Americanisation of German names, a degree of repetition and poor picture captioning are causes of minor, but genuine, annoyance to the informed reader. But, one of the book's greatest values is the detail which it contains on German fighter policy—or the lack of it—down even to unit level. Another strong point is the most complete operational history to date of the Me 262, and the men who flew it, which is re-readable material.

A number of books have appeared during the past two or three years on the tactical use, and misuse, of the Luftwaffe in World War 2; Horrido is a valuable addition and, with 338 pages, good value for money.

Canadian pilots

THE DANGEROUS SKY, by Tom Coughlin. Published by William Kimber Ltd, 6 Queen Anne's Gate, London SW1. Price 50s.

THIS book is devoted entirely to telling the story of the Canadian pilots and aircrews in World War 2 and is a straightforward and readable account of the exploits of Canadian airmen in all commands of the RAF and RCAF. Separate chapters deal with Fighter, Bomber, Coastal Command and so on while another chapter covers training and activities in Canada. There are pictures on nearly every page, some of which will be rare to British readers (the book was first produced in Canada) though there are a good many which come in the 'stock shot' category and have been seen often before. There is an appendix on Canadian 'aces' and other less useful ones which give scant details of the types of aircraft flown by Canadian crews and their German opponents. Though we feel that more could have been put into these listings—a tabulated appendix on RCAF squadrons would have been useful—the book itself does fill a gap on the aviation bookshelf. There are more than 200 pages and the volume is pleasantly produced complete with colour dustjacket.

Two for railfans

RAILWAY STATION ARCHITECTURE, by David Lloyd and Donald Insall. Published by David & Charles (Publishers) Ltd, South Devon House, Railway Station, Newton Abbot, Devon. Price 7s 6d.

DAVID LLOYD writes about sixty, in his opinion, notable English and Welsh railway stations and Donald Insall writes random thoughts on the subject ranging from the architectural defacement of furniture and advertisements to how one can acquire a disused station. Both are reprint articles from journals not normally seen by railway enthusiasts who will thus appreciate their republication in this 60-page illustrated paperback. Useful book this for anyone scratch-building model stations.

July, 1969

RAILWAY HOLIDAY IN ITALY, by P. M. Kalla-Bishop. Published by David & Charles (Publishers) Ltd, South Devon House, Railway Station, Newton Abbot, Devon. Price 30s.

AN official ban on railway photography, some of the ugliest (in our opinion) locomotives, steam, diesel or electric in Europe and a dreary khaki brown livery are not inducements to visit Italy for a railway holiday. Yet the author manages to convey his own enthusiasm so successfully our prejudice is practically dispelled. He is obviously very much at home with his subject and writes so knowledgeably that the book is an absolute mine of information regarding current practice as well as historic background. That there is much to be seen there is no doubt and the suggested fortnight's tour is both practical and all-embracing. As an introduction to Italian railways this 160-page book is ideal: if you plan to visit Italy and you are any sort of a railfan, it is an absolute must. Thirty-nine photographs, four maps, six appendices and an index are included.

Early tanks

BRITISH AND GERMAN TANKS OF WORLD WAR I, by Peter Chamberlain and Chris Ellis. Published by Arms & Armour Press, 677 Finchley Road, London NW2. Price 25s.

A CONCISE but comprehensive account of tank development in World War I from the British and German aspects, this book contains 66 illustrations and tells the story in words and pictures from the first notions of armoured vehicles prior to 1914, through to the actual tank designs which saw service. In addition, most of the tank projects which were not actually produced are also described. Data, a list of preserved tanks of the period, and a list of books for further reading completes this interesting volume. The pictures are reproduced large to show the detail and most are rare, some of them being previously unpublished. For instance there is the prototype A7V complete with wooden superstructure. Thus, while this is a good 'basic' book on the subject for anyone who wants to learn about the early tanks, it also offers much which is new for enthusiasts of longer standing. The authors are, of course, AIRFIX magazine's specialists on AFVs.

French uniforms

FRENCH ARMY REGIMENTS AND UNIFORMS, by W. A. Thorburn. Published by Arms & Armour Press, 677 Finchley Road, London NW2. Price 30s.

SIMILAR in format and size to the tank book reviewed above, this volume gives a most interesting coverage of the French army from the Revolution until 1870 since it deals briefly with organisation and the types of regiment as well as detailing uniform development of the period. All the illustrations, 58 of them, are from contemporary prints in the author's collection, and there are also two colour plates. With each picture goes descriptive text on the uniform illustrated (including colours) as well as historical notes relevant to the period where appropriate. This is a very informative and well illustrated guide to its subject and should be most useful to anyone making or converting Historex soldier kits or the forthcoming Airfix Waterloo period 00 size figures.

Military relics

MILITARIA, by Frederick Wilkinson. Published by Ward Lock & Co, and available from Ken Trotman (Arms Books), 18 Manwell Road, Swanage, Dorset. Price 35s plus 1s 9d postage.

THE most surprising thing about this attractively produced book is that nobody seems to have written anything quite like it before—though of course, there have been books on many individual aspects of 'Militaria'.

In brief it is an introduction to collecting items, either models, publications, or relics devoted to military subjects. Chapters are each devoted to one specific aspect with suggestions on scope, sources of supply, costs, and so on. Among the individual topics are medal, uniform, model soldier, weapon and print collecting, plus others. Each topic is, of necessity, briefly covered, but this is the sort of book to get a beginner going more seriously on one or more of the individual 'militaria' aspects described. In 250 pages there are dozens of interesting pictures—everything from recruiting posters to model soldiers and badges. Comprehensive listings are given of

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'Battle' class destroyers

DESCRIBED AND MODELLED
BY PETER HODGES

THE 'Battle' Class Destroyer was the culmination of several decades of British destroyer design, and was evolved to meet the stringent requirements of the Pacific theatre, for which the standard 'War Emergency' destroyers were not adequately equipped.

The 'Battles' boasted several notable improvements over their predecessors. Their main fire control system was more advanced: they were heavily armed with close-range weapons exclusively of 40 mm calibre; and they were the first British destroyers to mount their main armament in a true 'turret'.

The major gunnery shortcoming of many of the fore-runners to the 'Battle' class was the lack of adequate anti-aircraft defence both at long and close range. The close range armament problem was not too difficult to solve, and all the earlier destroyer classes were given additions or replacements in the form of single (and later twin) 20 mm Oerlikon mountings; 2 pounder mountings (pom-poms), quad and single; and, towards the end of the war, 40 mm Bofors.

The long range AA problem was more difficult to solve, however, principally because the standard 4.7 inch calibre destroyer guns had been designed as surface weapons.

Background to Main Armament

The 4.7 inch gun was first introduced in destroyers during the first world war, and was protected by a simple spray shield which merely covered the area of the breech and sunsights, leaving the pedestal mounting exposed. The maximum elevation of these weapons was 20 degrees.

Between the wars the 4.7 inch mounting was slowly improved as destroyer class succeeded class. The shield, although still not armoured, became more substantial; the style of mounting was changed to a Centre Pivot design, and in the 'A' and 'B' class ships the maximum elevation had increased to 30 degrees. However, this extra elevation only increased the effective surface range, and the guns were unsuitable for use against aircraft targets.

The advent of the 'Tribals' immediately before the second world war, heralded a new era of destroyer weapon layout. The new twin 4.7 inch gun mountings were a tremendous advance on their predecessors. Power elevation and training was provided together with power operated loading trays, and although the conventional torpedo armament was halved, the overall gun armament was more than doubled. Nevertheless the elevation upper limit of 40 degrees prevented the guns from tracking high fliers or from tackling dive bombing attacks. This fact was quickly recognised, and the 'Tribals' twin 4.7 inch gun in 'X' position was replaced by the ubiquitous twin 4 inch HA mounting.

The 'J' and 'K' class ships followed the 'Tribals', and were quite different in many ways. Constructionally they differed in being longitudinally framed; in appearance they were distinguished by



Above: HMS Aisne, one of the 1943 group of 'Battles' as she appeared in 1957, transferring a man to an aircraft carrier by light jackstay (Photo by Chris Ellis).

their single funnel; and in armament they reverted to a pair of torpedo tube mountings and three instead of four 4.7 inch twins. The quadruple 2 pounder pom-pom, first introduced in the 'Tribals', was retained, and was mounted immediately abaft the funnel where it re-appeared in many successive classes.

The 4.7 inch guns were the same mark as those of the 'Tribals', and suffered the same disadvantages. For this reason seemingly incongruous alterations were made to what were otherwise splendid and heavily armed ships.

Included in the latter were the 'M' class destroyers and half the similar 'L' class. Often claimed to have introduced turrets to British destroyers, their big twin 4.7 inch mountings certainly did look like turrets, compared with the open-shield guns of the 'Tribals'. In fact, they were simply enclosed gun-shields, mounted directly on to the upper deck, without a revolving trunk extending below.

This design created two problems. The first was how to supply ammunition to the inside of the gunhouse, and the second was how to dispense with the spent cartridge cases. The first problem was solved by containing the ammunition hoists within the centre pivot of the mounting, allowing the shell and cartridge to be delivered into the gunhouse, irrespective of its position. This, however, produced attendant problems. Because the gunhouse revolved around the hoists, the passage of ammunition from the hoist top to the gun loading tray varied depending on the bearing of the mounting and this complicated the loading drill. The second problem could only be solved by passing the spent cartridge cases out of the gunhouse through special hatches in the rear. In addition, although the big mountings could be trained by hydraulic power, the individually mounted guns could only be elevated by hand gearing—a laborious task when tracking an aircraft target. Altogether these mountings were difficult to use against aircraft targets, hence the rather odd state of affairs in *Lookout* and *Musketeer*, for example, which were given a single 4 inch HA gun, when they already appeared to be heavily armed with three twin 4.7 inch mountings.

The 'Battle' Class

These shortcomings were resolved in the 'Battle' Class destroyers which began to appear in 1944. There was already a twin dual purpose mounting in service which had first emerged as a prototype in the battleship *Resolution* between the wars, was then fitted in the modernised capital ships *Queen Elizabeth*, *Valiant* and *Renown*, and then became a standard mounting for the Fleet Carriers of the 'Illustrious' Class. This mounting had guns of 4.5 inch calibre, whose ammunition, although fractionally smaller than the 4.7 inch had superior ballistic qualities. Further layout improvements were made,

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Diagrams (right): (A) Deck for after superstructure; dotted extension for squid projectile handling room. (B) Deck for midship superstructure. (C) Deck for 'Q' gundeck for 4 inch gun or single Bofors. (D) Plan and elevations of 4 inch Starshell gun. (E) 'B' gundeck (fits over K with forward edges flush; overlaps K aft). (F) Sketch showing modifications to 'Tribal' hull at break of fo'c'sle. (G) After superstructure; dotted extension for squid projectile handling room. (H) Midship superstructure; dotted outline of (B). (I) 'Q' gundeck superstructure; dotted outline of (C). (J) 'A' gundeck; extends from fo'c'sle to foot of foremast. (K) Main superstructure. (L) 'A' turret, plan and elevations. 'B' turret is identical. (M) Early Quarterdeck; no squid mounting or handling room. Depth charge rails and centre of rotation for single Bofors. (N) Reduced midship gundeck; suitable for final versions of 1942 'Battles' and 1943 'Battles'. Dotted addition is Director for Twin Bofor (1943 'Battles' only). (O) 'Q' gundeck for 4.5 inch gun.

AIRFIX magazine

Scale of plans
and elevations:
1: 600

All drawings keyed
to caption at foot
of page 484 and
this page

Diagram key (continued)

(P) Bridge superstructure. (Q) Plan and elevations of Twin 'Hazemeyer' mounting. (R) Plan and elevations of single 4.5 inch gun. (S) Plan and elevations of American-type Director. (T) Front elevation of 1942 Group Director. (U) Plan and elevations of single Bofors. (V) Mast construction. (W) Isometric sketch of 4.5 inch Twin DP turret. (X) Front

elevation of diesel exhaust, showing yardarm. (Y) Front elevation of foremost head, showing yardarm and Radar aerial.

(Z) Curved shield in rear of bridge superstructure (fits on (P)) (ZZ) Arrangement of grips for all boats on davits.



Above: One of the destroyer classes described here which led to the evolution of the 'Battle' design; this is HMS Kimberly ('K' class) with the same twin 4.7 inch mounts as fitted in the 'Tribals'. The guns are shown here at their maximum elevation of 40° (Photo by Philip Jones).

'Battle' Class—continued

and the new weapon was fitted in the 'Battle' class ships.

It was a true 'turret' in miniature, with a revolving trunk containing power operated ammunition hoists, and guns with a very high maximum elevation. The empty cartridges were automatically ejected into a special compartment between decks, and thus could not accumulate in the gunhouse. The mounting could be automatically operated in Remote Power Control from the main Fire Control system as well as by auxiliary means. The fire control system, designated the 'Battle Class system', was much in advance of anything which had preceded it, incorporating a novel and highly efficient radar in twin nacelles, mounted on a power operated, stabilised Director. The same Director was used in several other classes of warships, and with minor modifications was fitted to the 'Darings'.

The earliest weapon layout in the first group of 'Battles' allowed for the following:

- 2× Twin 4.5 inch Dual Purpose.
- 4× Twin Bofors ('Hazemeyer')
- 4× Single Bofors
- 1× Single 4 inch (Star shell gun).

Armada (R14) is an example of a vessel with this layout, and *Trafalgar* (R77) was similar but as a rare exception had two single 2 pounder pom-poms on the bridge wings in place of the more usual single Bofors. Alternatively, some of the first group were as above, but with two single Bofors mountings (sided) abaft the funnel in place of the 4 inch gun. These ships thus carried the then remarkable total of 14 Bofors guns.

The 'Hazemeyer' Mounting

The twin 'Hazemeyer'—a Dutch development—was an early attempt to produce a weapon with its own built-in Fire Control system. The manufacturing drawings were rescued from the Netherlands just before the Germans overran that country in 1940, and the mountings were produced in the United Kingdom.

In due course, the mounting was further improved by the addition of its own radar set which fed a continuous measurement of range into the Predictor. Once target following had been initiated by the layer's and trainer's handwheels, the predictor produced a calculated 'aim-off' for the gun which then followed automatically in power control. The weapon was fully-stabilised to compensate for ship movement and in addition to the normal elevation and training motions, the whole of the gun cradle was able to 'roll' laterally around the axis of the gun barrels. This 'tri-axial' movement could result in the most odd—almost comical—attitude of gun barrels when the mounting was in a 'Power-off' state for maintenance.

The 'Hazemeyer'—popularly called the 'Haslemere'—was found in certain destroyers of the War Emergency classes between the 'S' and 'C' types in place of the more familiar quad 2 pounder pom-pom, and it was also fitted in some of the modified 'Black Swan' class sloops. *HMS Amethyst* for example, had a pair of 'Hazemeyers' abaft the funnel. When fitted in the 'Emergency' destroyers it was invariably mounted on a 'band stand' between the two sets of torpedo tubes.

The STAAG Mounting

The 'Hazemeyer' mounting was gradually replaced by a new mounting—the twin STAAG (Stabilised Tachometric Anti-Aircraft Gun)—of even more advanced design, which was completely automatic. This mounting could slew into line with a target indicated by long range warning radar, locate the target automatically, and follow it in radar control.

However, the STAAG was heavy, complex and expensive and in consequence was not mounted on the midship gundeck, between the tubes, which was then reduced in width.

The STAAG remained in use until quite recently, and fortunately for the model maker, the 'Darings' were fitted with these mountings on the wings of the Bridge. A pair are, therefore, available in the *Airfix Daring* kit—of which more in due course.

Early in the 1950s, as the ships came in for routine refitting, the quarterdeck single Bofors was removed, a Squid Mortar was provided in place of the obsolete depth charge rails and the after superstructure was extended towards the stern to accommodate the



Above: Close view of *HMS Aisne* again shows the distinctive turret shape and the US type director. Pennant number is black, blocked left and below in white (Photo by Chris Ellis).

Squid projectile handling room.

At about the same time the 4 inch star shell guns were removed from those ships so fitted, and a standard vessel emerged of which *HMS St James* in the Table is typical. The complete group of 16 ships became known as the '1942 Battles'.

The '1943 Battles'

Notwithstanding the splendidly aggressive look of the '1942 Battles', with all their main armament concentrated forward, the need for coverage of the after arcs by a 4.5 inch calibre gun was advocated.

The second group of 8 ships (or '1943 Battles' as they became known) were therefore given a single 4.5 inch mounting abaft the funnel, on the gundeck which originally carried the 4 inch star shell gun. The new 4.5 inch mounting was electrically powered and like the 4.5 inch twins forward, was capable of being controlled remotely from the main fire control system. Alternatively it could be used independently as a 'star shell gun', and became a recognition feature of this group of ships.

The close range arrangement was distinctive too. Like the '1942 Battles', the second group had the STAAG mountings 'en echelon' aft, and the single Bofors to port and starboard of the bridge. Here, however, the similarity ended. There was neither a single Bofors on 'B' gundeck, nor one on the quarter deck, but instead, a new twin Bofors mounting was sited on the gundeck between the tubes, which on the earliest 'Battles' had carried the 'sided' pair of 'Hazemeyers'.

Both the 'Hazemeyer' and the STAAG, with their built-in fire control systems and individual radars, were not suited to mass production methods, so a third twin Bofors mounting was designed. This was less sophisticated than its forebears, and did not have its own fire control, but nevertheless it was electric-powered and could be operated automatically in director control.

This mounting is the centre-line twin Bofors in the *Daring* kit, and in the '1943 Battles' it was mounted centrally on a mid-ship gundeck of reduced dimensions (N in the drawing). In this application it was controlled by a small director, mounted on top of the crew's shelter on the gundeck.

Incidentally, in their last commission the survivors of the 1942 group of 'Battles' replaced their two STAAG mountings with a pair of these simpler twin Bofors, but I have not included this rare variant in the Table.

Another distinction of the '1943 Battles' was the main fire control system, an American installation which was a standard equipment in the US Navy. As well as equipping the eight later Battles, it was also found in *Vanguard* and is still in service in the *Eagle*.

The American director on the bridge of the '1943 Battles' was noticeably different from that fitted in the earlier group, although it was modified to carry the same British radar set.

The final major weapon difference between the groups lay in the torpedo tubes, the quad mountings of the earlier ships being replaced by quintuple sets in the later vessels.

The Airfix 'Daring' Kit

Before launching into details of the conversion programme, let us first examine the *Daring* kit and extract the useful fittings from it. The two STAAG mountings and the midship twin Bofors have already been mentioned. Don't forget that their gun barrels will be wanted too. The following will also be required: both parts of the main director; all boats and davits (which are better than those in the 'Tribal' kit); the mast and fittings; the Squid mounting; all the

4.5 inch gun barrels; both sets of torpedo tubes. Cut off all the Carley floats too; three pairs are needed for a 'Battle'.

THE AIRFIX 'COSSACK' KIT—first steps in the conversion

- (1) Remove the breakwater, the ready-use ammunition lockers on the fo'c'sle, and the mounting pin for 'A' gun.
- (2) Cut away the bulkheads of the forward superstructure flush with the deck and reduce the height of the existing mast step as shown in (F). The fo'c'sle deck will be extended aft in due course, and the mast step will help to support it. File the mast step until the oblong slot of the moulding appears, and the height will be about right. Extend the fo'c'sle deck aft to conform with (J).
- (3) Remove the support for the machine gun platform, the associated lockers, the bulkheads of the after superstructure and the mounting pin for 'Y' gun.
- (4) File the curved step in the ship's side at the break of the fo'c'sle square, ready for the extension to the ship's side at fo'c'sle deck level, and fit the extension to conform with the drawing.
- (5) Plug all holes in the deck.

The hull is now almost ready for 'fitting out', with one exception. The 'Battles' had a square stern so the curved stern of the 'Tribal' hull must be carefully cut off and replaced by a balsa section to the shape shown in the layout. This will make the length right, but in fact the 'Battles' were beamier by 3½ ft. However, this is so small in 1:600 scale that it can be disregarded without detriment to the final appearance. Shape-up the balsa block from the keel and mount the propellers and rudder conventionally, if a full hull model is required.

Main Hull Items

All the superstructure must be scratch-built, but this is not difficult using plastic sheet and the full size drawings. Don't forget to undercut the height of the superstructure bulkheads by the thickness of the plastic sheet used for the deck, so that the resultant total height is correct.

Two moulded lines are formed on the 'Tribal' hull to mark the confines of the black 'boot topping', but the depth is much too great. A black band 1½ mm deep is quite enough, and the neatest way of achieving a dead sharp parallel strip is to paint a strip of Sellotape (or equivalent) matt black, and then cut sufficient for one side, using a straight edge and a razor blade. A short strip will also be needed across the stern.

Another advantage of this method is that the quality of the alignment of the grey topside colour and the anti-fouling bottom colour need not be very accurate, since it will be covered by the black strip in due course. Mount the Sellotape on a metal surface for painting.

TABLE OF 'BATTLE' CLASS VARIANTS

NAME		2×4.5 inch Twin	'Q' Gun 4.5 inch	'Q' Gun 4 inch	'Q' Gundeck 2× Bofors	'B' Gundeck 1× Bofors	Midships 1× Twin Bofors	No Weapon Midship Gundeck	2× Sided Midship 'Hazemeyers'	2× After Gundeck 'Hazemeyers'	2× After Gundeck STAAG	Torpedo Tube Mounting	Q.D. 1× Bofors	Bridge Wings 1× Bofors each side	Squid Mortar	Extended After Superstructure	American Type Director	Modified 'Daring' Type Director
<i>Armada</i>	R 14	Yes		Yes		Yes			Yes	Yes		QUAD	Yes	Yes				Yes
<i>Gravelines</i>	R 24	Yes			Yes	Yes			Yes	Yes		QUAD	Yes	Yes				Yes
<i>St James</i>	D 65	Yes			Yes	Yes		Yes			Yes	QUAD		Yes	Yes	Yes		Yes
<i>Agincourt</i>	D 86	Yes	Yes				Yes				Yes	QUIN		Yes	Yes	Yes	Yes	
REMARKS																		
							'Daring' Kit Parts 43 and 44											
											'Daring' Kit Parts 45, 46, 47 and 48							
											'Daring' Kit Parts 16 and 17							
																'Daring' Kit Part 49		
																		'Daring' Kit Parts 6 and 7



Above: *HMS Armada* converted and detailed as described in this article from the *Airfix Cossack* kit.

(I used an old biscuit tin), so that its adhesive is not lost when it is peeled off.

An excellent porthole effect can be obtained by carefully piercing the bulkheads with a fine drill in the appropriate positions. If you haven't a fine enough drill handy, try a household pin in a hand brace, with the pin head clipped off. The jagged stub of the pin will easily cut through plastic. Alternatively a hot pin can be used. There are several screen doors giving access to compartments. One of these cut out and left open also gives a most realistic effect.

Construction Notes

Starting from forward, add the Jackstaff and its twin supporting 'legs' from extended plastic sprue. The moulded cable holders on the fo'c'sle can remain, but a new V shaped breakwater is required forward of 'A' turret. There are pairs of bollards abreast the muzzles of 'A' turret, beneath the bridge Bofors, abreast the foremast and abreast the after superstructure: make them from sections of plastic sprue too. Another section of sprue on the centre line of the bridge represents the compass, and signal lamps can be similarly depicted in the sponsons on the bridge wings.

The type of main fire control director depends on the 'Battle' groups chosen. Both are shown on the plan, and T—for the early 'Battles'—can be made from the *Daring* kit director. One point, here, however. The radar nacelles of the 'Battle' director were lower than those in the 'Darings'. Trim off the support beam from part 7 in the *Airfix* kit, and mount the nacelles level with the slot in the front face of the director. Aft and above the nacelles a range-finder was originally fitted; again plastic sprue can be used to represent this instrument.

The foremast can be adapted from the *Daring* kit, but a better job can be scratch built. I have shown the construction of the mast—V in the drawing. Notice that the diagonal frames are in opposite directions on parallel mast faces, giving a cross effect when viewed from the side. Aerials and the yardarms are again made from the slimmest sprue as are the whip aerials on the funnel. Angle these outwards slightly towards the ship's side.

Make the funnel from balsa to the dimensions shown, allowing

Continued on next page

'Battle' Class—continued

enough material to form a 'bell' base on the deck. Twin waste steam pipes—plastic sprue of course—lead up its forward surface. A semi-circular platform is fitted on the after side giving access to the sirens. Soak a scrap of nylon stocking in plastic cement, and when dry, cut to shape. This gives a good grating effect.

Ship's boats are the same as for *Daring*—Motor cutters each side at the break of the fo'c'sle; a whaler abreast 'Q' gun on the starboard side and a dinghy, (*Daring* kit part 8) inboard close up to 'Q' gun deck on the port side. Mount the other boats just flush with the ship's side, as shown in the plan, making holes in the deck for the davits as necessary.

The centres-of-rotation of the torpedo tubes are shown on the plan. Quad or quintuple tubes should be mounted depending on the group of ships. A pair of quad sets can easily be adapted from parts 16 and 17 of the *Daring* kit. Position the torpedo davits (parts 18 and 28) as shown.

All the gundecks have ready-use ammunition lockers—shown as small squares and rectangles on the plan—and each of the gundecks abaft the funnel has a crew shelter in the form of a small deck house and also a small ammunition davit. The gundecks are linked from fo'c'sle deck level by a series of cat-walks, which pass through the crew shelters, (except if deck C is fitted, when the crew shelter is centrally placed). The catwalk to 'Q' gundeck is invariably on the starboard side of the funnel.

The gundecks had either plating splinter shields or guard rails, but fortunately those with guard rails usually had a canvas 'wind-dodger' laced on to them, so that all can be surrounded by paper strips, forming a bulwark.

There is a diesel exhaust on the midship gundeck fitted with a yard to take the W/T aerial main, and on the after gundeck is the diminutive main mast with an ensign gaff. Above the crew shelter on the midship gundeck is a small visual gun director position for the centre line twin Bofors, only applicable when a 1943 'Battle' is modelled. Make the director position from a thin paper tube and use a scrap of plastic sprue within it to represent the director sight.

The layout of the quarterdeck depends on the group of ships. The differences can be seen in the drawing and are also tabulated. One point—make sure that the Squid mounting, if fitted, is angled to fire ahead. In the Airfix *Daring* kit it is shown 180 degrees out. The various small shapes represent hatches, winches, etc., and are made from scrap plastic.

The position of the Carley floats is shown on the drawing. Make their support rails from sprue and similarly support the sponsons carrying the bridge Bofors.

Gun Construction

The twin 4.5 inch mountings are best adapted from the *Cossack* kit. The shape is a little complex, but the sketch in the drawing should help.

The 4 inch star shell gun and the single 4.5 inch mounting are scratch built, as are the single Bofors and twin Hazemeyers. The latter were very complex in shape, but fortunately the mounting was protected by a large canvas 'wind dodger', laced to the frame-work in the rear. The difficult complexities can therefore be overcome by cementing a small curved piece of paper as shown in the drawing.

The other varieties of twin Bofors are available from the *Daring* kit, and their location is shown in the Table.

Painting

Only the earliest vessels of the 1942 group were completed before hostilities ended, and once the war was over a certain level of peace-time autonomy was allowed in respect of paintwork and brightwork. The modeller can, therefore, produce his 'Battle' in 'tiddley' peace time finish.

The basic colour is, of course, grey, but this can be relieved by dark green gundecks and bridge, as well as a dark green fo'c'sle deck from the breakwater, aft to the foot of the foremast. There is a further green area at main deck level abreast the after gundeck. The rest of this deck is grey, both from the break of the fo'c'sle aft to the forward bulkhead of the after gundeck, and also in the area of the quarter deck.

All the superstructure is grey as are davits and gun mountings.



Another view of the Armada conversion.

Paint the gun barrels, the funnel top and the mast from bridge level to the yardarm, black, and put a touch of black on the top of the diesel exhaust.

The fo'c'sle, forward of the breakwater can be painted a dull brick red; Humbrol LMS Crimson Lake is ideal. Pick out the cable holders and the raised plating in grey for a contrast effect. The quarter deck area can also be painted red instead of grey, if desired.

When the main deck areas are dry, cement on the lockers, bollards, ventilators etc., and paint them grey. Again, the contrast will be most effective.

The muzzles of the 4.5 inch guns and the 4 inch (if fitted) can be given a tiny dab of silver, to represent the polished-collar, or alternatively paint a 1 mm white band on the muzzles to represent the canvas cover.

Pick out the following in white: (1) Front face of director radar nacelles, (2) Carley floats, (3) Foremast yardarm, warning radar aerial and topmast.

The boats can be painted almost any colour: red, blue, pale green, black and white, or even grey! Dark blue is quite popular, but whatever colour is chosen, use gloss paint and paint all the boats to match. White decks to the boats contrast well, and a final touch for 'Admiral's Inspection' can be achieved by painting the canopies of the motor cutters gloss brown to represent the varnished woodwork.

Below the water line, use the same dull red as the fo'c'sle for the anti-fouling paint, make the boot topping black, and the propeller blades bronze or gold.

Other Variants

This is by no means the end of the 'Battle' class. HM ships *Cadiz* and *Gabbard* were transferred to the Pakistan Navy in 1957; Australia built two ships which differed considerably from the British; four of the 1943 Group were converted to Fleet Radar Pickets; and finally, HMS *Sluys* was sold to the Iranian Government who placed her in the hands of Messrs Vosper Thornycroft for modernisation. Renamed *Artemiz*, she is nearing completion, having been extensively rebuilt.

Details of these variants will be dealt with in a future article, so last month's main drawing should be retained for hull and basic superstructure detail.

PENNANT NUMBERS

The following numbers were allocated in the first instance:—

1942 Group		1943 Group	
* <i>Armada</i>	R 14	† <i>Agincourt</i>	I 06
* <i>Barfleur</i>	R 80	<i>Aisne</i>	I 22
† <i>Cadiz</i>	R 09	† <i>Alamein</i>	I 17
* <i>Camperdown</i>	R 32	<i>Barrosa</i>	I 68
* <i>Finisterre</i>	R 55	† <i>Corunna</i>	I 97
* <i>Gabbard</i>	R 47	<i>Dunkirk</i>	I 09
<i>Gravelines</i>	R 24	† <i>Jutland</i>	I 62
* <i>Hogue</i>	R 74	<i>Malapan</i>	I 43
* <i>Lagos</i>	R 44		
† <i>St James</i>	R 65		
<i>St Kitts</i>	R 18		
† <i>Saintes</i>	R 84		
<i>Sluys</i>	R 60		
† <i>Solebay</i>	R 70		
† <i>Trafalgar</i>	R 77		
<i>Vigo</i>	R 31		

NOTES

- (1) Ships marked * were originally fitted with a 4 inch star shell gun.
- (2) Post war pennant numbers were changed to flag 'D' superior, and the following numerical alterations were made at the same time: *Cadiz*: D 79 *Agincourt*: D 86 *Vigo*: D 231
- (3) Ships marked † were completed as Leaders. When so employed they wore a black band on the funnel (4 mm deep on the model) and no pennant numbers.
- (4) Pennant numbers were also worn on the stern but not invariably.
- (5) *Saintes* was used as a trials ship for the *Daring* type twin 4.5 inch mounting, which was temporarily fitted in 'B' position.
- (6) A further 16 vessels were ordered, but were cancelled in various stages of completion.

A 'FIRELESS' LOCOMOTIVE FROM THE 'PUG'

By Michael Address

FIRELESS locomotives are a rather uncommon type which are used in a number of factories and other installations, such as oil refineries, where even an enclosed fire would be a hazard. They are just the same as other steam driven engines except that they have neither fireboxes nor boilers. Instead there is a steam reservoir which can be recharged as necessary with hot water and high pressure steam. One charging of the reservoir allows several hours working. The cylinders are almost always positioned under the cab to shorten the lengths of the various connections required.

A number of these locomotives have been used by various firms in England; most were standard gauge 0-4-0s, but a 2 ft 6 in gauge 2-4-0 has been used at Bowater's Sittingbourne works. I have only ever heard of one model of a fireless locomotive and that was of an American prototype, so here is your chance to have something a little out of the ordinary for your layout. My model is loosely based on a Peckett 0-4-0 built in 1955 and used by a soap, candle and starch factory near Manchester. While bearing a close resemblance to this locomotive, however, the model is essentially 'freelance'. It is unpowered and is a quick and easy conversion from the Airfix Pug kit. If you do prefer a powered version it is perfectly feasible to use one of the motorisation kits produced for the Pug by various firms; it would be necessary to turn the chassis back to front, however.

The mainframe assembly construction is as in the kit instructions for steps 1 to 12. However the footplate (part 7) is fitted to the mainframes the opposite way round (that is with the rear edge to the front) and is fixed so that its rear edge extends 7 mm beyond the front end of the mainframes. This allows the cab steps to clear the cylinders. A rectangle of 60 thou thick plastic card 29.5 mm x 7 mm is fitted at the other end of the footplate to bring that end flush with the end of the mainframe assembly.

I cut off the two tool boxes because I thought they were going to be in the way

of the steam reservoir and I glued them back in position slightly nearer the outer edges of the footplate. However I realised afterwards that this was probably unnecessary as they would have been all right in their original position. The small rectangular opening in the footplate between the toolboxes should be covered by a piece of thin plastic card of appropriate size.

I cut the firebox away from the cab (part 12) and filled in the resulting gap with plastic card. The safety valves should be trimmed off the upper and lower surfaces of the cab roof (part 15). Cab assembly is otherwise as in the kit instructions. The front buffer beam (part 10) is fitted to the front edge of the footplate after cutting off the three lamp brackets from its upper edge. The reversing rod (part 19) can be added at this stage. For the front steps I cut the steps off the cab sides from a second Pug kit. I trimmed the rear part of each so that the front and rear edges of the step structures are symmetrical as shown in the photos. Using parts from a second kit may seem extravagant but the kits are inexpensive and the remainder of the parts are always useful for other conversion work or even just as 'scrap' parts to leave lying about near your railway's repair shops or engine shed. However if you wish to economise you can easily build the extra pair of steps needed from plastic card.

As mine is an unpowered model I did not fit working couplings. I modified the scale couplings provided (parts 17A) by filing out the centres of the links with a fine needle file. This takes a little careful



Above; View from front shows footplate detail made from scrap.



Easy and attractive conversion from the Airfix 'Pug' kit is this 'fireless' locomotive, ideal for an industrial layout or private sidings. Model is closely based on a Peckett design, but is strictly speaking 'freelance'. Essentially it needs just a new 'boiler' and the chassis reversed.

work but I think the finished effect is so much better than the appearance of the solid links of the couplings as supplied that the effort is well worth while. Alternatively you can use purchased scale three-link couplings.

The steam reservoir is a 42 mm length of 18 mm outside diameter plastic tube. I was fortunate in having a discarded plastic disposable hypodermic syringe of just this size; however a tube can be formed from plastic card or rolled from paper that will be just as satisfactory. For the steam dome I used one of K's cast parts; this was of a 'policeman's helmet' shape and I had to cut the top off using a razor saw, followed by filing to square up any inaccuracy of the cut and to round off the top edges. Use my photos as a guide to the sort of shape to aim for but do not worry if it doesn't turn out quite the same as the shape of the steam dome varies quite a bit on different fireless locos. Note that the steam dome is quite large; this seems to be characteristic of these engines. The bottom of the particular dome I used fitted the curve of the steam reservoir quite closely and it is as well to check this when buying one. A certain amount of discrepancy can be corrected by filing if necessary. The bottom surface of the dome I used has a central peg and I drilled a hole in the tube to take this then cemented the dome securely to the steam reservoir.

At this stage I also drilled holes for the six (three each side) handrail stanchions. I don't know the makers of the ones I used but they are very neat; I bought them from Bec Model Shop, Tooting, but most big model railway shops sell them. The steam reservoir and attached dome should be painted at this stage. The handrail stanchions can now be fitted and the handrails (lengths of 15 amp fuse wire) added using just a trace of glue in the openings in the stanchions applied immediately before slipping the handrails into place. The front of the reservoir is cut from 60 thou thick plastic card to the shape shown actual size in the drawing. Take care in shaping

Continued on page 493



The British Army '14-18

UNIFORMS AND REGIMENTS
DESCRIBED
BY DAVID NASH

Part I: Infantry 1914

AMONGST the armies of Europe in 1914, the British Army was unusual in several respects. Unlike the continental powers, Britain did not fill the ranks of her armed forces with a host of conscripts; the army was composed entirely of long service regular soldiers. Her army was also the only one of the protagonists which had seen active service on a large scale in the twentieth century. It was in the Boer War, where most of the British generals had made their names, that no small part of the field service regulations in force in 1914 were formulated. These two factors account for the quality of the British Expeditionary Force that went to France in 1914. It was the best army that Britain had ever fielded and, moreover, it could with some justification claim to be the best in the world at that time. The former reason also explains why it was the smallest army in a campaign in which soldiers were numbered in millions.

This British regular army had virtually ceased to exist, however, by the end of 1914. The First Battle of Ypres had finally decimated its ranks to such an extent that the precision of the old soldiers was seldom to be seen again. By this time, however, Britain's second line forces, the Territorials, were engaged alongside the regulars and, as the war progressed, a further force began to engage itself in increasing numbers. This third element, Kitchener's 'New Army', eventually formed the largest single part of Britain's land fighting forces. The 'New Army' dated from the early days of the war, when Field Marshal Lord Kitchener's accusing finger and the slogan 'Your King and Country needs you' helped to fill the recruiting offices with volunteers. Kitchener, the Minister of War, was opposed to the Territorial Force, 'those amateur week-end soldiers'

and refused to allow the mass armies he envisaged, to be based on the Territorial's framework. His new armies, the service battalions of existing regiments, the 'chums' and the 'pals' went 'over the top' on July 1, 1916 and into the hell that was the Somme. It was perhaps their extraordinary ardour and patriotism which carried them through that first day's baptism of fire when, before sunset, 60,000 men were casualties. Thereafter, with the introduction of conscription, the distinction between Regular, Territorial and Kitchener's 'New Army' became less and less, all were British soldiers caught up in the bloodiest war man has ever known.

During the war Britain raised a total of 82 divisions numbered as follows:

Regular Cavalry	1-3
Regular Infantry	Guards Divn, 1-8 and 27-29
Territorial Mounted Divisions (Yeomanry)	1-4 (later 1-4)
Territorial, 1st Line	Cyclist Divns)
Territorial, 2nd Line	42-56
New Army	57-69
Home Service Divisions	9-26; 30-41
Anglo Indian Division	71-73
Dismounted Yeomanry	75
Royal Naval Division	74
NB: No 70th Division existed	63

Each Infantry Division consisted of



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three brigades, numbered consecutively through the divisions. Each brigade was formed from four battalions, reduced to three in early 1918 when an acute shortage of manpower hit the army. The battalions were the basic infantry unit and were titled and numbered on the existing regimental system. Usually each regiment had its 1st and 2nd battalion composed of regulars; the 3rd, 4th and sometimes 5th battalions were Territorial and thereafter any further battalions in a regiment were designated 'service battalions' enlisted and raised for the duration of the war. The 'second line' territorial units were duplicates of the original Territorial Force battalions and were designated thus, 2nd/3rd battalion. The number of battalions within a particular regiment could be extraordinarily high. Including cadets, the Royal Fusiliers for instance, had no fewer than 65 battalions. The active field battalions in any one regiment, however, were seldom numbered above 20. Each battalion consisted of a headquarters and four rifle companies and numbered just over 1,000 officers and men.

The dress of the entire army was khaki. The word khaki derives from the Persian for 'dust-coloured' and described anything from a greenish-brown to brownish-yellow. The combat dress of 1914 was officially styled 'Service dress, home service'. The line infantry were dressed as follows. The head-dress was the peaked cloth cap of 'universal pattern'. The crown of this cap was stiffened with wire hoops, but the rigid top reflected too much light and these hoops were soon discarded to give a rather floppy appearance. On the front of the cap was a metal regimental badge. Secondary to the cap was a woollen cap comforter.

The tunic had a roll collar and four patch pockets, each fastened with a button, plain cloth shoulder straps and five buttons fastening it down the front.

The buttons were gilded metal, die struck. Frequently on the collar were worn regimental badges and often the shoulder straps were embellished with metal 'shoulder titles'. Details and styles of these were subject to regimental variation. The trousers were made of a drab mixture of material, essentially however, khaki in colour. They were secured underneath puttees which were rolled from just below the knee to over the top of brown ankle boots.

Officers' dress was similar to that of other ranks, but differed in the following respects: rank was indicated on the cuff which bore a French patch. These patches were edged in white NCO's tape, and on them were mounted the familiar system of pips and crowns. The collar was turned back, showing small lapels and exposing a shirt and tie. It was soon found that this type of tunic attracted enemy snipers' fire and before long, officers in the front line took to wearing 'other ranks' tunics (as described above) with rank insignia on the shoulder straps. Mounted officers wore riding breeches and jack boots; other officers wore loose knickerbockers with either cloth puttees or leather gaiters, after the strohwasser pattern, and ankle boots.

The personal equipment was made of webbing and was of a pattern introduced in 1908. It consisted of a broad belt with a nest of cartridge pouches worn on each side of the plain buckle. Attached to the belt by hooks and slides were the braces which supported the pack. A 'small pack' was worn on the left hip, under which was carried the bayonet and entrenching toolhandle. The head of the spade was carried horizontally in a webbing cover across the skirts of the tunic. The canteen was carried on the right side. This web equipment was, in many ways, the invention of the devil and the complexities of its fastening were such that different units wore it in widely contrasting ways. Officers carried revolvers and swords. These were suspended from a 'Sam Brown' belt: additional items, with their own straps, were slung over the shoulder. One must also remember that obsolete equipment was issued on occasion since production



could not keep pace with army expansion. So some training units could be seen with pre-1908 equipment as worn in the South African War.

The line infantry described above, consisted of the English, Welsh and Irish county regiments. The Fusiliers were dressed in identical fashion and the Foot Guards differed only in as much as the buttons were made of bronze; Rifle regiments were again similar, their buttons being painted black, their service battalion often having old pattern leather equipment polished black.

All Scottish regiments wore a tunic with rounded front corners to the skirts, the officers' cuffs being cut in a slanting pattern with no patch. Highlanders wore a glengarry bonnet, a kilt covered with a

khaki apron and long stockings, but otherwise they were dressed as for the line regiments. The Highland Light Infantry were dressed as for a Highland regiment but wore trousers instead of a kilt and had black buttons. The Lowland regiments were dressed as for the Highland Light Infantry, but with gilded metal die struck buttons.

The illustrations this month show the equipment and style of uniform described. For those modellers wishing to get started on turning out correctly detailed figures of 1914 British line regiments these details should suffice. Using the Airfix 1914 British troops, little extra work is needed and a note of minor additions is given with the model pictures.



Left: British infantryman in marching order, 1914. Top of page: Officers' service dress including style of rank badge. Beneath this is the style of cuff for Scottish regiments. Above: Airfix models with added detail, including 'small packs', bayonet scabbards, and entrenching tools from plastic card.



Increased variety is readily available in your OO gauge wagon stock by converting the 16 ton Mineral Wagon into the 24½ ton (or similar 21 ton) version. This view shows the completed model (on right) contrasted with the standard vehicle.

24 ton wagons

THREE years ago in AIRFIX magazine I started to discuss some possibilities with the Mineral Wagon kit. In the March 1966 issue I showed ways of adding realism by painting and fitting three-link couplings, etc, and in the May 1966 issue I showed some conversion possibilities using the chassis as a basis for scratch building standard RCH 10/12 Ton 7-plank private owner coal wagons. Unfortunately the articles had to cease at that point as Airfix withdrew the kit. However, I am now pleased to say the kit is back in limited production and can be obtained from the more specialist model shops, particularly the ones dealing in railway modelling. Because of the limited production the price is slightly more than it was three years ago but it is still a comparatively low price kit and a very worthwhile proposition as a basis for more conversions.

This month I want to show how to use the 16 ton mineral wagon kit as the basis for a model of the BR standard 24½ ton mineral wagon. This is a particularly economic proposition as it makes use of surplus body parts left over after the 7-plank coal wagon conversion described in the May 1966 issue. After more than three years I still had my left over parts to hand and I made good use of them in this month's model.

I have no idea how many 24½ ton



BY **NORMAN SIMMONS**

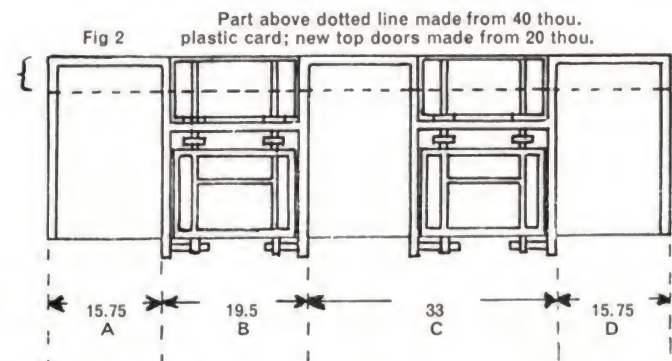
mineral wagons were made by BR and how many are still in use. I understand there were several hundred but they were built for more specialised services such as regular block train workings between collieries and power stations. Therefore they do not normally find their way into the smaller coal depots and become so widespread as the smaller 16 ton wagons. There are different versions, some with welded and some with riveted frame and bodywork, while some have roller bearings and oleo pneumatic buffers. They have a 12 ft wheelbase, measure 21 ft 6 ins long over headstocks and 9 ft 11 ins high above

rail level, and are exactly the same width as the 16 ton wagon.

Apart from their length and height there are many points of similarity between the 24½ ton and the 16 ton wagons. The end doors and side doors appear to be the same size and the body side stanchions and style of construction appear identical. Apart from size, the one major point of difference is the double sets of side doors and top doors. For this reason we need two 16 ton wagon kits to supply the necessary body parts.

Fig 2 shows a side elevation of the 24½ ton wagon body. It will be seen that the main part of the body below the dotted line is made up from 4 sections, lettered A, B, C and D, cut from the Airfix 16 ton body parts. No particular problems occurred in cutting or joining these sections together except that you will see all the joins occur alongside the vertical stanchions where the joins are largely obscured and become difficult to detect. The parts were laid face upwards on a sheet of glass while the cement was hardening to ensure that the body sides remained flat and in the same plane.

Unless working doors are particularly required I would suggest it is as well to cement them in place at this stage to give the body sides added strength. After the body sides have been assembled and the cement has thoroughly dried, file away the top 'lipped' edges where they occur either side of the doors. Now cut two strips of 40 thou plastic card 4.5 mm wide and the length of the side and cement these on edge along the top of each side. After the joint has thoroughly dried smooth it with a file and sandpaper until the two pieces merge together. The vertical stanchions and the top 'lipped' edges can then be built up with strips of plastic card of the appropriate width and thickness. New and deeper top doors were cut from 20 thou plastic card to replace the Airfix ones which were cut away. It is hoped that the photographs of the model before



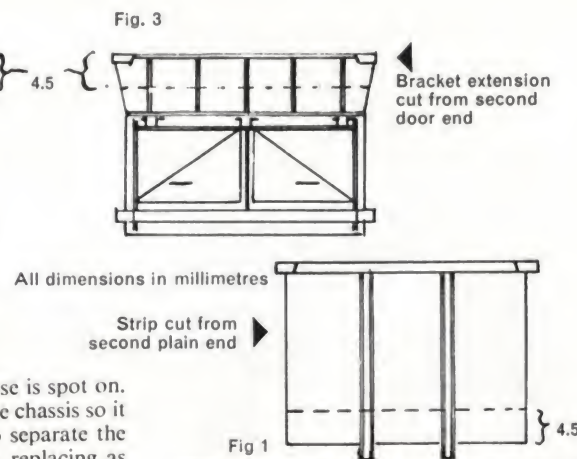
painting as well as Fig 2 will make all these points clear.

The two ends also have to be increased in height by 4.5 mm. The plain, non-opening end is simple; the vertical stanchions were cut away at the bottom on one end and a strip 4.5 mm wide was cut from the bottom of a second end and cemented in place—see Fig 1. The door end was a little more complex as the increased height needs to be added at the top where the bracket for the door hinge needs to be studied. Basically a bracket piece from one door end was cemented on the top of a second door end, the vertical angle pieces and such like were carefully carved and filed to shape after the cement had thoroughly dried—see Fig 3. The join in the two pieces is not too noticeable and passes muster. To finish off the body a new floor was cut from 40 thou plastic card measuring 83 mm x 30 mm and the sides and ends were cemented around it.

Now for the chassis. There are several methods one can use. The simplest might be to use the chassis from a Playcraft mineral wagon. These are quite cheap and run very well. Unfortunately, although this model is intended to be a 24½ ton mineral wagon the bodywork is out of scale for 00, being noticeably too low in height and slightly too short and too narrow. It is a pity as the detail is

very good and the wheelbase is spot on. The body is cemented to the chassis so it may not be an easy job to separate the two. The buffers will need replacing as they are set too close together and look noticeably undersized.

Another method is to extend the wheelbase of the 16 ton mineral wagon by cutting the sole bars and extending them with pieces cut from a second kit. The brake rigging and brake lever can likewise be extended. As a further variation I cannibalised an Airfix Esso tank wagon kit and used some of the chassis parts from this kit. It was necessary to reduce the wheelbase in this case but this was a simple matter. The full vacuum brake bear with vacuum cylinder and clasp brakes can be taken from this kit and used to make a vacuum fitted wagon or you can do simply as I did which was to use four only of the brake mouldings and make up a handbrake assembly out of strips of plastic card. The brake levers were a spare pair left over from a Ratio GWR Tube Wagon kit and these were extended in length using plastic card strips. Tie bars and door stops made from plastic card were fitted. I have seen these wagons with single or double door stops so it would appear there is a choice. Finally, two dummy loads were cut and cemented together and raised in height to suit the larger



Above; Vacuum-fitted 21 ton wagon as mentioned in text, complete with pneumatic buffers. Number is B 311304.K.

capacity of the new wagon.

There is a 21 ton version of these wagons with body sides practically the same height as the 16 ton wagon. This would obviously be an easier conversion to make and one that is worth considering as a means of adding further variety to one's rolling stock. A 21 tonner I saw recently was vacuum fitted with clasp brakes and oleo pneumatic buffers so the Esso tank wagon chassis parts would be ideal to use for this model. The left over chassis parts from the mineral wagon kits can of course be used for 7-plank open wagons and the body parts from the Esso tank wagon could also be used for a lineside oil storage depot—there need not be any wasted parts!

'Fireless' Locomotive — from page 489

this part as any inaccuracy will be rather evident in the finished model. The front is painted and then glued to the front end of the reservoir and the whole structure is then glued to the cab and footplate. The buffer heads (parts 18) may need a little filing of their faces to remove any central pit (present in some of the mouldings) after which they can be painted and fitted. The small lamps on the cab back and on top of the front of the steam reservoir are commercial castings which I got from Bec Models. The prototype on which my model is loosely based has a bell mounted on the reservoir just in front of the cab. I have

been unable to obtain a bell as yet but when I do I will add it to the model.

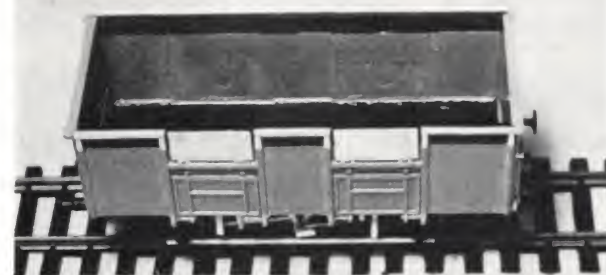
I used parts, suitably cut down, from an Airfix Prestwin Silo Wagon kit (I've already used some parts from this kit for other conversions so it is not as wasteful as it sounds!) for the two small fittings on top of the steam reservoir in front of the steam dome (part 14 for the rear one and part 60 for the front one)



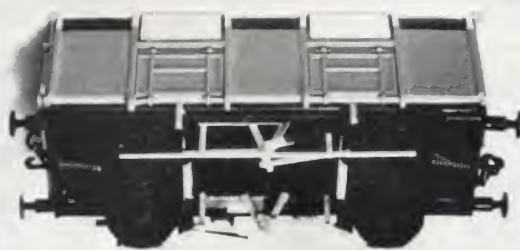
Left; Full-size template for the steam reservoir end, as mentioned on page 489.

and for the filling pipe on the front of the steam reservoir (part 55). However as this kit has now been withdrawn you may not be able to obtain one; if this is the case these fittings could be fairly easily modelled from scrap plastic.

The colour scheme I chose is: cab, steam reservoir and dome, and tool-boxes green; buffer beams red; hand-rails and posts unpainted; chassis and steam reservoir fittings black; buffer heads, wheel rims and coupling rods silver. As many of these locomotives were used by private firms more colourful paint schemes and lining are quite in order if you wish.



Above, left; The completed conversion before painting showing the plastic card additions in black and white. Above, right; Underside of same wagon, using in this case a modified Esso tank wagon chassis with brake detail added from plastic card.





A mobile pigeon loft converted from a B type bus, seen on the Western Front in 1917 with attendant dispatch riders (Imperial War Museum).

Pigeon Loft from a bus

1914-18 MODEL By D. J. McHENRY

MANY ingenious devices were used to overcome communication problems on the Western Front, 1914-1918. Signal flares were fired in colour combination codes and the infantry used Popham fabric panels to show their positions to the RAF, but it was the pigeon loft seen in an old *War Illustrated* which led me to make the conversion of a B type bus to an Army motor Pigeon Loft.

The loft depicted in my model is one used by the Canadian Corps of the Fourth Army during the Battle of Amiens which started on August 8, 1918, and resulted in the 'Black Day for the German Army'.

The Canadians had three lofts allotted to them with a total of 236 birds; one was at Pont de Metz, another at Flixecourt and the third at Villers Bocage. As a point of interest the three Tank Brigades involved in the Battle each had a loft of 70 birds.

An amusing statement in the General Staff Instructions for the battle states that, 'should more birds be required for the use of Tanks than allotted above they will be provided by the corps out of their own resources'.

Now for the construction itself: Either of the two buses which Airfix produce can be used, although I would suggest the 1910 'B' type be chosen as the window transparencies are needed, (on the other hand the soldiers from the 'Ole Bill', bus would be useful)—the choice is yours.

The body sides are first to be dealt with. The second and third windows must be 'squared' to 20 mm x 24 mm thus removing the upper curve on the frame. Wooden boarding is now inserted into the openings, both being scored diagonally as shown in the drawings and photographs. The transparencies are now added. Window frames are made from 20 thou plastic card 1.5 mm wide.

The lower deck front section, part number 6 is boarded up with 1/4 inch balsa strip. Part 16 the rear exit is again boarded up at the windows and 2 doors are constructed being the same outline as the exit and halved down the middle. These can be glued in the open position as long as the interior is painted black.

Construction follows as stated in the instructions for the chassis and cab. The upper deck floor is put in place. Note that the upper deck does *not* have any overhang above the cab and therefore the roof top is covered with thin card to conceal the location slot for the upper deck front and the gangway ribbing.

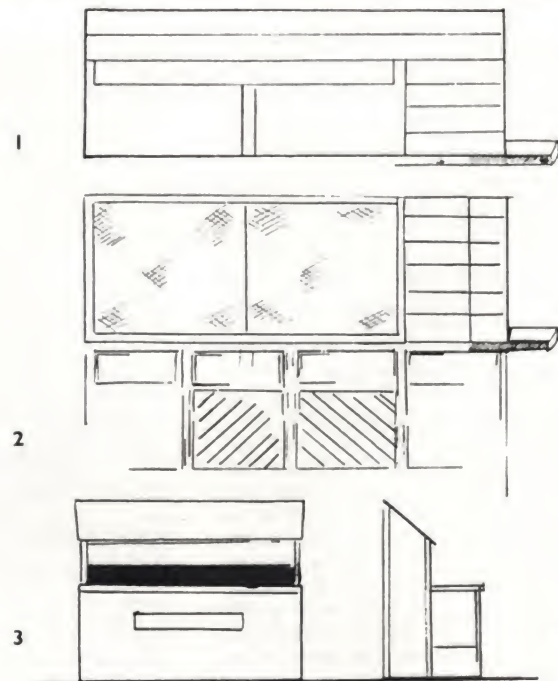
The axle and wheel assembly follows the instructions, but the

staircase is not yet positioned as I found that it got in the way when building the upper deck.

The upper deck

The 1/4 scale drawings show the basic construction of the sides. The boards are 1/4 inch balsa strip. The height is 38 mm. The front and rear panels both follow the slight curvature of the roof as shown in the photograph.

A door way is cut 32 mm high x 16 mm wide in the rear upper deck



Above: (1) Nearside upper deck with cages removed. (2) Same with cages in place. Both drawings 1:64 scale—double all dimensions for model. (3) Pigeon entrance front. (4) Pigeon entrance side. Both drawings 1:32 scale, full-size for model. Below: Side view of completed model (Photo by P. Buckoke).



at the top of the staircase, and a door of this size is glued to the off-side of the entrance. Hinge supports 12 mm x 2 mm are positioned 4 mm from the top and bottom of the inside of the door.

The cages

These are made from strip balsa, 25 x 38 for the front and rear portions. The base is plastic card 84 mm x 25 mm. Netting is an old nylon stocking, glued with impact adhesive such as 'UHU'.

Continued on page 515

AIRFIX magazine

Modelling an Australian Mirage IIIO

By Alan W. Hall

INSPIRED by the content of the January 1969 issue of the *IPMS Magazine* which dealt almost exclusively with several versions of the Mirage III, I have selected the Royal Australian Air Force version, the Mirage IIIO (A) for this month's conversion.

The work on this kit is for the fairly advanced modeller as it means cutting up the fuselage in several places, giving the kit a considerable clean up and adding underwing stores. Anyone contemplating this conversion will be forced to lean heavily on his spares box as a source of supply but if you have done plenty of previous conversions this should be no problem.

The *IPMS Magazine* on which the work in this conversion has been based is one of the best that the organisation has yet produced. As far as reference goes it can hardly be faulted but with very little room to spare they have been forced to cut down the amount of detail in the methods used to convert the original kit. I can, however, thoroughly commend the issue concerned as the best source yet for information on the Mirage. Not only are there drawings for RAAF machines but French, Swiss, South African, Israeli, Pakistani and Lebanese as well. Similarly the photo-reconnaissance version, the IIIR, is shown together with the two-seat trainer and the more recent Mirage M.5.

Many of the alterations mentioned here are suitable for Mirage aircraft in air forces other than the RAAF. For those not listed the modeller must use his own ingenuity but the work, as a whole, is not too difficult.

The Royal Australian Air Force version is built in Australia and at present there are three squadrons with one re-equipping. An operational conversion unit is based at Williamtown, NSW, where most of the operational squadrons live except for one which is on permanent detachment in Butterworth, Malaysia, or Singapore.

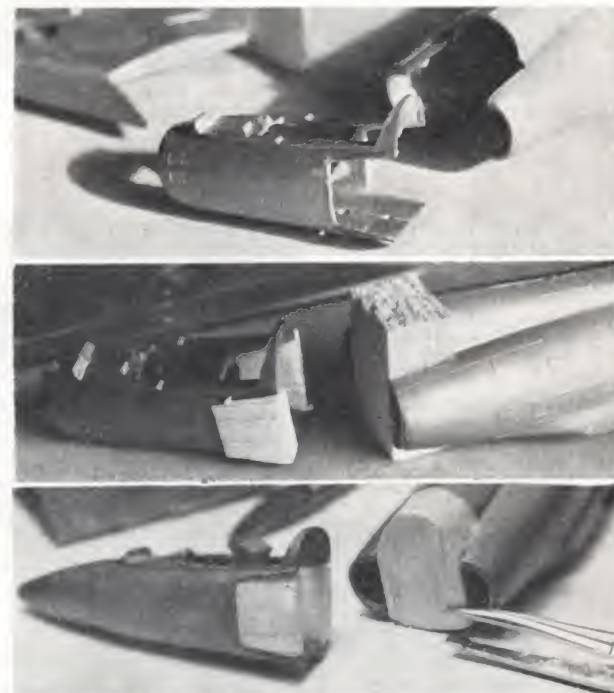
The RAAF order for 100 aircraft consisted of the two prototypes and 48 Mirage IIIO(F) interceptors with Cyrano IIA fire control radar and 50 Mirage III A(O) ground attack aircraft. The former are serialised A3-3 to 50 and the latter A3-51 to 100. Ten two-seat Mirage IIID's serialised A3-101 to 110 were imported direct from France.

The four squadrons which will eventually be operational with the Mirage are No 3, 65, 76 and 77. A number of the aircraft are camouflaged grey/green overall whilst the remainder are left in natural metal. My model of a No 75 squadron aircraft comes in the latter category as the tail markings presented an unusual challenge.

July, 1969



Mirage IIIOs of No 75 Sqn, with A3-24, subject of one of the drawings on the next page, shown nearest the camera. What appear to be coloured bands are, in fact, light grey areas like the panel at the fin tip and behind the fuselage roundel, not indicated on the drawings. Note that A3-32 had normal D type roundels rather than 'kangaroo' roundels on the wings (RAAF Official photo).

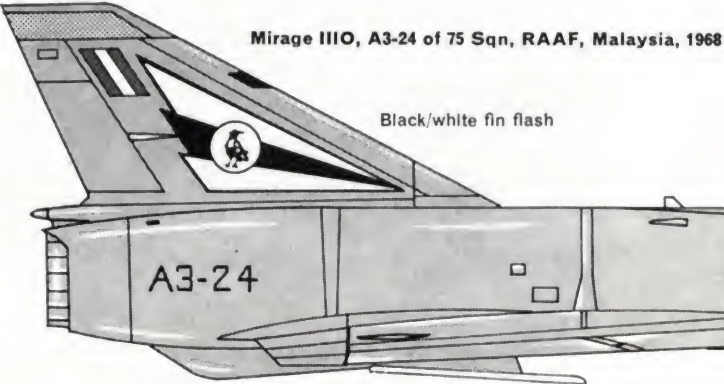


Above, top to bottom: Three successive stages in lengthening the fuselage behind the cockpit for the Mirage IIIO model.

STAGE 1 Assemble both fuselage halves. When dry cut off the nose section with a fret saw 1/4 inch back from the air intakes leaving these in position. Make a balsa wood plug to fit between the engine intakes the same depth as the fuselage and extending to lie flush with the edges of the intakes themselves. The nose under-carriage wheel well is filled for part of its length. The fuselage section is set aside to dry and then two pieces of balsa sheet are cut to fit the gaps that appear in the nose section of the fuselage after this has been removed from the rest of the model. These should be thick

Continued on page 498
Scale drawings on next page

Mirage IIIO colour schemes
Royal Australian Air Force

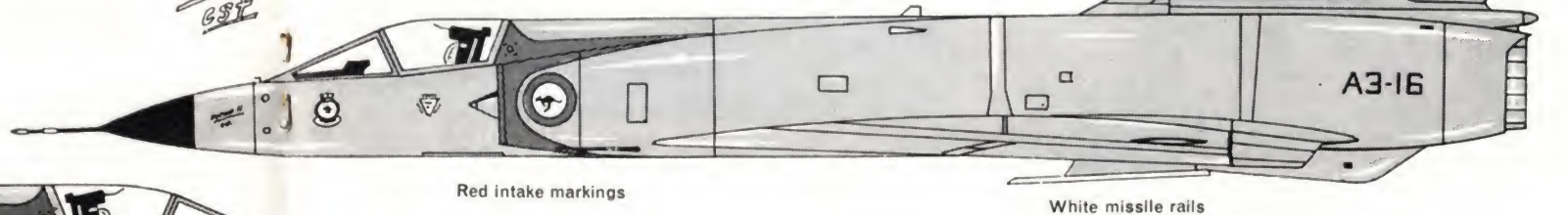


Enlargement
of nose marking

*Cyrano II
est*

Mirage IIIO, A3-16 of No 76 Sqn, RAAF, 1968

Dark brown panther
Black and red
fin flash



Red intake markings

Underside

Ventral tank details

Forward

Front

Nose

Doppler bulge underneath

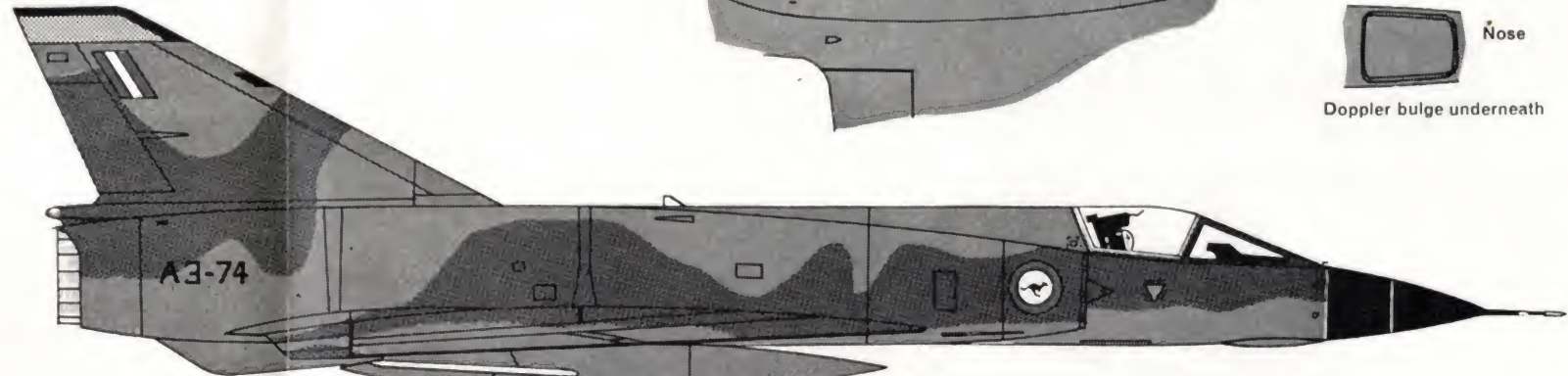


Standard RAAF red/white/blue
roundel



Feet inwards, head forwards
(underside only on
camouflaged aircraft)
Use Almarks Type A RAF
roundels with hand-painted
kangaroo

Note positions
of warning
stencils on
control surfaces
(black lettering)



Mirage IIIO, A3-74 of No 3 Sqn, RAAF, Williamstown NSW, 1968



Drawings by Richard E. Gardner

Nose badge is
winged torch

'74' on wheel doors

Note: A3-74 in white

Australian Mirage—continued

enough and extend outward enough to allow for rubbing down later to complete the cross section of the fuselage. When the nose and fuselage additions have dried out, stick the nose back on again and rub down the completed fuselage to the right dimensions, filling the completed result with clear dope and talcum powder mix, and leave to dry.

STAGE 2 The nose cone is filled with lead shot and Plasti-cine and stuck in position. The ejector seat can now be added and the whole nose area must be sanded to improve its shape and get rid of the ugly ridges that appear due to the fit not being too good. The air intake shock cones are then cut down, removing the backing part from those supplied in the kit and thinning down the actual shock cones themselves. After these have been stuck in place the angular fillet at the lower part of the fin is removed by knife and



Top: Nose treatment and fuselage lengthening complete. Above: Underside view with central tank added.

modelling saw so that the fin leading edge is straight. Whilst doing this some slight damage might occur to the fuselage top line which will in any case need filling. I used body putty for this job waiting until it had dried out hard before attempting to rub down with sandpaper.

STAGE 3 Making the alterations to the jet orifices involves marking off the section to be removed by placing the fuselage on the plan and scribing the line to be cut. The section is removed with the aid of a fret saw making sure that the 'pen-nib' shape is retained. I found that the afterburner section from an Airfix F-104 kit came in handy now. This was cut down by removing one of the ribbed sections and then sticking it together again. To ease its insertion into the Mirage model the inner side had to be filed down. The result was an exceptionally good likeness to the Mirage III's jet orifice and the work was easier than I had thought in the first instance. Final work on the orifice area involved the shortening of the para-brake



Above: Close up of tail markings of completed model, in this case A3-40 of 75 Sqn.

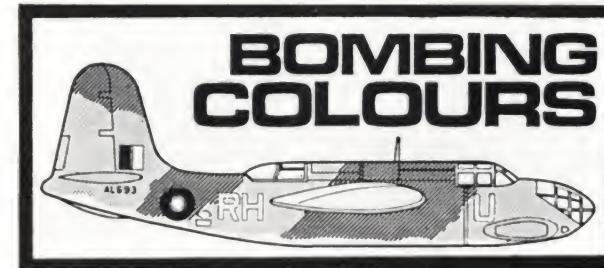
housing which was cut to the right length and then sanded into shape again.

STAGE 4 At this stage I started to remove some of the excessively heavy detail on the kit wings and fuselage. The former had been assembled whilst waiting for other parts to set and now they were joined to the fuselage. Remember that the main undercarriage doors are in the up position when the aircraft has its undercarriage legs down so these can also be fitted now and rubbed down. A lot of body putty will be needed to fill the gaps between the wings and fuselage. When rubbing down and general clean-up operations have been completed add the pair of wing flap guides from the kit, first making sure that these will fit as the gaps may have become clogged with sandpaper dust when rubbing down.

STAGE 5 The Mirage's under-fuselage fuel tank is now added. This is made from a small piece of balsa 2 1/2 inch x 1/2 inch and 1/4 inch deep. The shape is roughly sanded before adding it to the fuselage with polystyrene cement. Careful shaving away of the two surfaces to be joined will have to be done first as the kit has a bulged area in the spot where the tank is supposed to go and this must be allowed for if a good joint is to result. When in place a thick coating of filler is given to the whole area, wood and plastic alike, and allowed to dry before rubbing down.

STAGE 6 Attention can now be given to final details. The undercarriage legs and remaining doors are stuck in place as are the nose wheel and its components. Wheels are painted and put aside to wait until the model is completed before fitting. The undercarriage doors are on the thick side and require a lot of gentle rubbing down to get the proper section. Underwing drop tanks come from the spares box and I used a pair from an Airfix Skyraider. As an alternative those from an F-104 can be used but in both cases the fins have to be removed and the body changed in shape quite considerably. I considered it better to use these than start with a piece of wood which would have meant filling and polishing taking a greater length of time. The kit outer wing pylons were cut down drastically to take the wing tanks and plastic card was used as a basis for the Side-winder pylons. I have a number of these missiles spare in my bits and pieces box and it was a simple matter to clean them up before painting. The canopy was stuck in place at this stage. I preferred to have mine open and achieved this by filing a flat on the rear of the cockpit coaming at the correct angle and making this fit the cut off main section of the canopy. The model is now ready for painting.

Below: Completed model, depicting a 75 Sqn machine in silver finish.



Part 4: The Handley Page Night Bombers

FIRST of the twin-engined heavy bombers to go into regular service, the Handley Page bomber was conceived by the Air Board of the Admiralty as a 'bloody paralysing'. The prototype Handley Page 0/100 emerged in 1915 as the largest aircraft ever built in Britain. On December 9, 1915 it was moved by road from the firm's Cricklewood works to Hendon, where it made a short first flight on December 17.

The prototype 0/100 was in clear doped fabric finish, with its serial 1455 marked in small black digits at the extreme rear of the fuselage. The second prototype, with a lengthened nose, flying on April 23, 1916, was similarly finished, but with the number 1456. Nos 1457-1466 of the initial order for twelve followed at intervals, but by the time they reached units, the khaki PC10 pigmented cellulose dope was the standard finish. The prototype, brought up later to production standard, was repainted khaki for service in No 16 (Naval) Squadron.

Roundels borne by Handley Page 0/100s were the largest ever to appear on British service aeroplanes, by virtue of the fact that they were marked over the full wing chord and fuselage depth of the then largest aeroplane in service.

The first service unit of 0/100s was known simply as 'The Handley Page Squadron'; the commanding officer, Sqn Cdr J. Babington, took office on August 4, 1916. Aircraft Nos 1458-1461 were allotted and No 1460 was the first to fly to France in October 1916. When No 1461 followed it force landed at



Top: An 0/100 with typical large roundels and rudder striping. Above: An 0/400 with standardised small roundels and rudder flashes. Note the fine white outline to both flash and roundels. There are no roundels under the lower wings. (G. S. Leslie/J. M. Bruce collection).

July, 1969



Handley Page 0/400, D8345, trundles in to land over the tree tops. Note that the 'D' of the fin serial is superimposed on the tail flash over the white/red segments.

Abbeville with engine trouble and Babington issued a warning about maintenance, pointing out that in this case the aircraft had landed safely in our own territory. There was a fear that an example of Britain's giant bomber might fall into enemy hands—and this is precisely what did happen some weeks later and in consequence the Handley Page concerned had its roundels changed to black crosses.

It happened like this. The 0/100 left England at 11.30 hrs on January 1, 1917 with pilot, observer and three mechanics. Over the Channel, fog was experienced and the pilot, Lt Vereker, took the aircraft up to get above it—and ran into a thunderstorm, which upset the compass and the pilot decided to turn back. The weather deteriorated further and the machine was brought down with the intention of landing as soon as suitable land was sighted. After noting a church steeple when flying at 150 feet the pilot put the Handley Page down into an adjacent field. The crew then set out to walk to the nearest telephone to get aid—only to find they were made captive having landed in enemy territory near Laon. Since the Germans intended a flight test evaluation of their prize, the roundels were obliterated and black crosses applied. Exactly six months earlier one of the first FE 2Ds (A9) had flown straight from Farnborough to land in enemy territory south-west of Lille.

In early 1917 a few 0/100s reached No 3 Wing but were later withdrawn and together with others from England entered service with No 5 Wing, RNAS. After daylight bombing operations against enemy destroyers in which No 3115, the first of the second order for 0/100s, came down in the sea off Ostend, operations were confined to night attacks. An exception was in September 1917 when four were withdrawn for a short period to Redcar for daylight anti-submarine operations. Four 100 lb bombs were dropped from 3123 on September 21, on a German U-boat seen lying on the sea bed in clear water, but without any result.

By the time the Handley Page had been put into large-scale production as the 0/400 with a modified fuel system and detail improvements, a standardised finishing scheme was evolved and the drawings show the two standards. As always, there were some exceptions to the general rulings.

Exclusive type markings

An unusual feature, exclusive to Handley Page aircraft products 1915-1919, was the positioning of the serial number at the extreme rear of the fuselage; in black on early uncamouflaged machines and in white on those with khaki finish. An unusual feature of the 0/400s, and almost exclusive to these bombers, was a rudder flash not unlike the fin flash of today. The reason for the change from rudder striping to a small flash was evidently

Continued on next page

Bombing Colours—continued

the same reason for the change from large to small roundels; that the large white area of the national colours was deemed to compromise camouflage. In the second world war history was to repeat itself on this aspect of bombing colours.

There was yet another marking, and a completely new type of marking, that was exclusive to the large Handley Pages—night handling markings. It was often necessary to have the aircraft turned into wind for take-off or turned after landing. To ensure that ground handling parties at night, lifting the tail to swing the aircraft round, applied lift on a member of the structure and not on unsupported fabric, the appropriate points were suitably emphasized with thick white lines.

Even pilot's individual markings were presented on positions exclusive to the type since, apart from limited use of Caudron GIVs, the 0/100s and 0/400s were the only twin-engined bombers to be operated during the war by the RFC and RNAS. These markings were placed centrally on the tip of the nose. The style had been set in the autumn of 1917 when No 3123, an 0/100 mentioned above, was stationed at Redcar. The pilot, Flight Lieutenant L. G. Sieveking, DSC, had the reputation of breaking more mess glasses than any of his colleagues and was generally regarded as hamfisted with anything except a control column. Thus, the nose of his aircraft bore a hand-painted splay-fingered fist, with Sieveking's nickname 'SPLIT-PIN' beneath. The idea took on and the nose tip became the area for personal markings—although some Commanding Officers had different ideas about embellishing HM aircraft and in these units the noses were kept clean. Sieveking was shot down on October 31, 1917 in No 3123 and taken prisoner.

Overseas 0/400s

A number of 0/400s found their way East. They can be classified by describing their markings as they staged through Italy on their way out. First was No 3124 which, having left Manston on May 23, 1917, flew from Pisa to Rome seven days later on its way to Mudros for attacks on the Turkish ships *Goeben* and *Breslau*, and on Constantinople, to make the first inter-continental bombing attacks in history. It was finished in the khaki shade of PC10 and had large roundels.

Next came a much later production model, C9681 staging at Rome in July 1918 on its way to Palestine for attachment to No 1 Squadron, Australian Flying Corps. Participating in bombing attacks in advance of Allenby's troops liberating the Holy Land, it earned the nickname of 'Father of all Aeroplanes' by local tribesmen. This had the standard finish of late production aircraft with the smaller roundels and rudder flash in place of rudder striping.



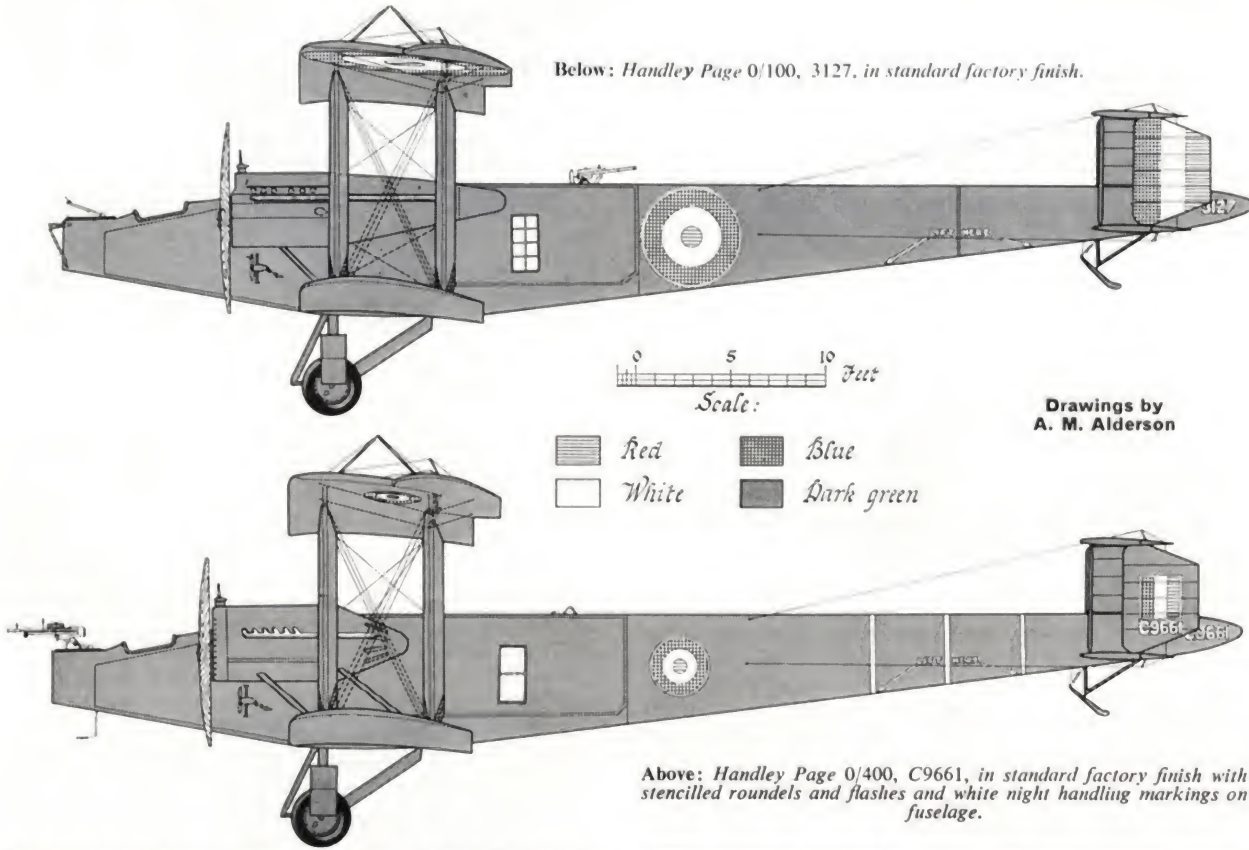
Above: 0/400 of No 207 Squadron. Aircraft were lettered 'A', 'B' or 'C' according to flight in the squadron, with Nos 1 to 6 in each case.



Top: Captured—Lieut Vereker's 0/100 with its roundels superseded by Iron Crosses. The 'Lift here' marking is retained and can just be seen. This finish would look interesting on a suitably converted Airfix 0/400 model. Above: An exception to the rule. An 0/100 with large roundels outlined in white. (G. S. Leslie/J. M. Bruce collection).

Plans to establish ten Handley Page squadrons in Egypt with a training centre in Crete were shelved at the time of the Armistice, but just after the war the plan was revived on a more modest scale and Nos 58, 214 and 216 Squadrons moved to Egypt. In general these were all in drab wartime standard finish, but No 214 Squadron enlivened their aircraft with nose insignia. Appropriately the Commanding Officer's machine had a yellow crown on the nose, denoting his badge of rank—Major. Lesser

Table of Handley Page bomber Serial Allocations (excluding cancelled orders)				
Serials	Type	Contractor	Remarks	
1455-1466	0/100	Handley Page	Initial production Eagle engines	
3115-3142	0/100	Handley Page	Eagle engines. 3138 0/400 prototype	
B8802-8813	0/400	Royal Aircraft Factory	Eagle engines	
B9446-9451	0/100	Handley Page	Cossack engines	
B9463-9465	V/1500	Handley Page	Prototypes	
C3381-3480	0/400	Handley Page	Order delayed	
C3487-3498	0/400	Royal Aircraft Factory	Eagle engines	
C9636-9785	0/400	Handley Page	Eagle, Maori or Liberty engines	
D4561-4660	0/400	Metropolitan Waggon Co.	Eagle or Liberty engines specified	
D5401-5450	0/400	Birmingham Carriage Co.	Mainly Eagle engines fitted	
D8301-8350	0/400	Handley Page	British Caudron and Harris Lebus assisted in production	
D9681-9730	0/400	Clayton & Shuttleworth	Mainly Eagle engines fitted	
E4304-4323	V/1500	Harland & Wolff	Assembled by Handley Page	
E8287-8306	V/1500	Wm Beardmore	Some assembled by Handley Page	
F301-320	0/400	Birmingham Carriage Co.	Mainly Eagle engines fitted	
F3748-3767	0/400	Handley Page	Eagle or Liberty engines specified	
F5349-5448	0/400	National Aircraft Factory No 1	Eagle or Liberty engines specified	
F7134-7143	V/1500	Alliance Aeroplane Co	First service deliveries of type	
J1934-1935	V/1500	Handley Page	Built up from spares	
J2242-2291	0/400	Birmingham Carriage Co	Mainly Eagle engines	
J6573	V/1500	Handley Page	Replacement for F7140. Lion engines	
J6574-6576	0/400	Handley Page	Replaced F5414, F5417, F5418	
J6578	0/400	Handley Page	Replaced D8350	



Below: Handley Page 0/100, 3127, in standard factory finish.

Drawings by
A. M. Alderson

Above: Handley Page 0/400, C9661, in standard factory finish with stencilled roundels and flashes and white night handling markings on fuselage.

lights had motifs according to their whims; D8323 displayed an ivy leaf, significant, no doubt, of a lady friend, D4578 bore a terrier. Unfortunately the squadron lost several aircraft en route. C9714, D4591 and F304 crashed in July 1919 and a replacement machine, C9743, was destroyed in a gale at St Raphael the same month. The other two squadrons had similar troubles and Lawrence of Arabia broke his arm when D5439 in which he was a passenger crashed en route.

The Super Handleys

Last of the line of Handley Page bombers of the First World War was the V/1500 which was a new design, embodying features of the 0/400, but apart from being four-engined with pairs of pusher and tractor engines mounted in tandem, it was a much larger machine outspanning the 0/400's spread of 100 feet by another 26 feet. It first flew on May 25, 1918.

PC10 was the initial overall finish, with roundels stencilled as on the 0/400, but rudder striping in lieu of flashes. Intended for bombing Berlin, the first few were entering service at Bircham Newton when the Armistice was declared. Squadron and individual markings were not applicable, but two acquired names which were painted on the nose. *Atlantic* was shipped to Newfoundland for the first Atlantic air race, but the attempt was abandoned after Alcock and Brown had crossed in their Vimy. The other, marked HMA *Carthusian* made the first through flight to India in December 1918. During 1919 most surviving V/1500s were placed in store.

At the end of the war night bombers were being subjected to a new camouflage finish, resulting from experiments carried out in 1918, that set the style for postwar years. The nature of these experiments and their effects will be the subject of Part 5 in this series.

Bruce Robertson



Top: Rear view showing positioning of the serial at the extreme end of the fuselage—a practice exclusive to and consistent with Handley Page bombers. Photo also shows that rudder flashes appeared on both sides of each rudder (G. S. Leslie/J. M. Bruce collection). Above: Handley Page V/1500, evidently a brand new machine with rudder striping but devoid of roundel or serial.

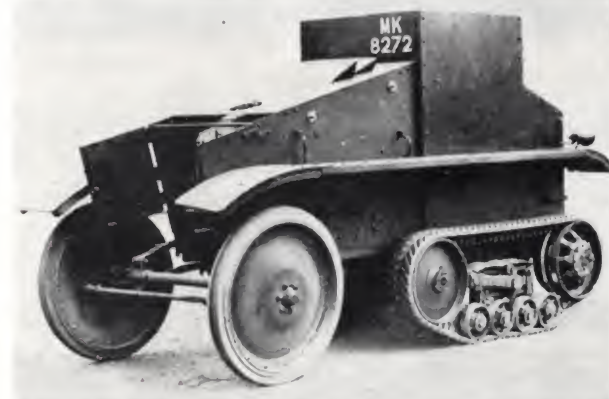
Part 1: Development

THE tracked Carrier was a vehicle peculiar only to the British Army during the pre-war period and up to and during the 1939-45 war. This type of vehicle had evolved from an extensive development programme carried out by the firms of Carden-Loyd Ltd and Messrs Vickers-Armstrong which ranged over a period from the late 1920s to 1939. From the introduction of the Vickers Machine Gun Carrier in 1935 to the end of the war in 1945 the basic design remained unchanged; the carrier had light suspension units of the Carden-Loyd (Horstmann) type, with the drive at the rear. The superstructure, which varied with the different models, basically was of an open top box-like form with vertical sides. The engine was located at the rear and the driver's position was on the front right-hand side, though in the later Canadian-built Universal models and the US T16 Carrier the driver was located on the left side.

The development of the Carrier type of vehicle had its origins in a series of machines, the one and two man tankettes built independently by the firms of Morris, Crossley, Carden-Loyd and Vickers-Armstrong's Ltd in the mid 1920s. These firms had designed and built various cheap, light tracked armoured vehicles manned by one or two man crews as a means of providing armoured mobility for the infantry. The idea of armoured mobility for the foot soldier had first been suggested by the French General Estienne in 1915 who envisaged the employment in mass of armoured skirmishers to replace the infantryman. This French project had later culminated in the Renault FT light tank.

After World War I this idea again was revived by Colonel (later Major General) J. F. C. Fuller and several British Army officers became interested. One of them, Major (later Lieutenant General Sir Gifford) G. Le. Q. Martel undertook during 1925 to construct a machine at his own expense. The vehicle was built in Major Martel's garage and was made entirely of ordinary commercial motor components with the addition of a pair of tracks. The machine proved successful in a demonstration given to officials of the War Office who later authorised the building of one and two man versions by Crossley and Morris Motors, various prototypes being completed by these firms.

Due to the publicity received from the trials of the Martel prototype the firm of Carden-Loyd Tractors Ltd, who also had constructed a cheap light tracked chassis, approached the War Office for recognition of their enterprise and the War Office was sufficiently impressed to recommend an order for an experimental machine.



Above: One of the Crossley built tankettes, seen from the rear. Note the ordinary car radiator and car type wheels.



After various models of these so-called tankettes had been built and tested (some of which included wheel and track versions) in 1927, the British Army ordered eight of each of the latest design from Morris and Carden-Loyd, the 16 machines to be employed as scouts with the Experimental Mechanised Force then being formed.

The Carden-Loyd machine which was ordered for the Mechanised Force was a wheel and track version designated Mark IV. This was followed by the Carden-Loyd Mark V, also a wheel and track machine. It was the last vehicle to be produced by Carden-Loyd Tractors Ltd. During March 1928, Carden-Loyd was absorbed and became a department of Vickers Armstrongs Ltd. The next machine of this series was the Mark V* which was an improved version of the Mark V and was produced by the



Above: One of the Morris-Martel tanks with rear steering 'tail'.

merged firms of Vickers-Carden-Loyd. In 1928 the Mark VI appeared, the machine that was to become the progenitor of a long line of tracked carriers. It was a low two-man vehicle weighing 1.5 tons and capable of a speed of 25 mph. Various models of the Mark VI Carrier, to carry medium machine guns, mortars and smoke projectors were developed for use with the infantry, and other models served as light gun tractors. In its role of machine gun carrier, the heavy Vickers machine gun could be dismantled from the front of the vehicle and re-mounted on a tripod that was normally carried on the front left side of the vehicle.

By 1930 the Mark VI Carrier had attained reasonable mechanical efficiency but due to its moderate fighting capabilities it was relegated in infantry units to the function of a utility tractor and its fighting role was abandoned. A fighting role for a Carrier with the infantry, however, remained a requirement and since the cavalry was in the progress of mechanization, further uses were therefore contemplated for the Carrier and the need for a more battle-worthy machine became paramount.

On February 1, 1935, a meeting was held at the War Office to discuss a new type of vehicle developed by Vickers Armstrong Ltd. This machine had, in fact, been designed as a replacement for the expensive and complicated light dragons then in use as gun towers, but it was considered by the Mechanization Board

as equally suitable as a machine gun carrier. The War Office decided to purchase two of these machines for test purposes, one as a machine gun carrier and one as a light dragon. 'Dragon' was a generic name given to certain tracked vehicles used for gun towing or troop carrying. Due to a change in policy, however, the dragon version (Light Dragon Mark III) was later dropped after 69 vehicles had been built.

In the original concept of this vehicle as a machine gun carrier, it was required that it should have a driver, gunner, and machine gun in an armoured front, thus being able to return the enemy's fire as it advanced. It was also required to carry a machine gun team consisting of four men, machine gun, tripod and ammunition, able to leave the carrier and operate independently from it.

One experimental machine was built to this specification, the basic chassis and suspension being that of the Light Dragon Mark III. However the top superstructure had been considerably altered. The compartment for the driver and front machine gunner consisted of an armoured box, and positioned centrally behind this was the engine which was protected by steel hinged plates mounted on a frame. Seating accommodation for the independent machine gun unit was arranged on either side of the engine. Protection for the machine gun unit was achieved by

Below, top to bottom: Carden Loyd two man tankette, Carden Loyd one man tankette. Carden Loyd Mk IV wheel and track tankette.



Top: Carden-Loyd Mk VI was the first true carrier. Above: Prototype Light Dragon Mk III which introduced the Horstmann type suspension.

means of two collapsible armoured sides. This vehicle was called the **Experimental Carrier, Machine Gun** (WD No T.1583 (BMM 939)).

In the next version to appear of this class of machine, the crew was reduced to three with just the front machine gun. The folding armoured sides were dispensed with and the left side of the vehicle superstructure was now made a fixture forming a compartment for the third member of the crew. The right side of the vehicle was left open and used for stowage. Other modifications to this machine included the fitting of air ducts either side of the engine and the enclosing of the front headlamps in steel boxes. Designated **Carrier Machine Gun No 1, Mark 1**, a small batch of these machines were built in mild steel (WD Nos T.1828-T.1840, T.1921). Six of these machines were later converted as pilot models for Carrier, Machine Gun No 2 Mark 1, Cavalry Mark 1 and Scout Mark 1, the remaining vehicles being used as instructional machines.

Early in 1937 **Carrier Machine Gun No 2, Mark 1** appeared. This was basically similar to Carrier No 1 Mark 1, but with many improvements. The front Vickers machine gun was now mounted in an armoured housing, the engine air ducts had been modified, the steel boxes on the front headlamps had been removed and a stowage box had been installed on the right side of the vehicle. The superstructure on the left side of the carrier had been improved and an armoured folding back-rest was fitted for the third man's protection and comfort.

After Vickers Armstrong had built a batch of these machines (WD Nos T.2294-T.2336) their work on this class of machine ceased and other firms undertook production. These included Thornycroft (T.2531-T.2621), Morris (T.2832-T.2982), Aveling Barford (T.3231-T.3291), and Sentinel Wagon (T.3716-T.3915). Primarily built to carry a medium machine gun, the carrier was again modified late in 1938 to mount the Bren Light Machine Gun. This was due to the adoption by the British Army of this Czech designed weapon. The gun housing was adapted for this light machine gun with consequent alteration to other equipment. Some of these vehicles were also fitted with the Boys anti-tank rifle. These carriers, and the Carriers Machine Gun No 2, Mk 1 that were modified and rearmed with the Bren

Continued on page 515



Above: Just visible in this view of DR1 163/17 is the narrow border of undersurface blue round the edge of the mainplane. In the original print it is also discernible along the lower edge of the fuselage. Foot of page: Construction of the DR1 clearly apparent from this captured aircraft on display with other German items at the Agricultural Hall, Islington, at the end of the '14-18 war (Imperial War Museum photos).

BY now most modellers, young and old alike are familiar with Von Richthofen's 'all red Triplane', Voss's 'Silver blue Triplane' and with the exotic markings and colours of the Triplanes which equip the German fighter squadrons of fiction. Let us dispense with fiction now, however, and examine the actual markings of this aircraft. Firstly we will look at a standard production machine as it was before it joined a squadron and from this deduce the normal factory finish originally applied to all of these machines. Having determined this we can next look at two rather special Triplanes, F1 102/17 and 103/17, the pre-production aircraft given to Jagdgeschwader 1 for evaluation and which are normally associated with Voss and Von Richthofen. Finally we will study production machines in squadron service and see exactly what type of markings and colourings they did carry and how these were applied to the factory finish.

Details of the performance and service career are readily found from several excellent reference sources and will not be mentioned

A guide to the Fokker DR1

DETAILED DRAWINGS, DESCRIPTION, AND COLOUR SCHEMES BY PAUL LEAMAN

here. But as some knowledge of an aircraft's structure is essential to a full appreciation of its outward appearance this will be described at some length. Where colours are concerned those given for the factory finish have been matched with existing remnants of such an aircraft. For this purpose the *Methuen Handbook of Colour* was used as a comparison source and from this the colours were mixed using paints easily obtainable at the model shop. A comprehensive bibliography of reference sources will be given at the conclusion of the series.

Construction of the DR1

The general construction of the machine followed closely on the pattern established by earlier aircraft from the Fokker factory and featured an extensive use of welded steel tubes. The fuselage was of simple rectangular structure and was entirely built of welded tubes, strength being given by bracing wires fastened to quadrants in the corners of the frame. The engine, normally an Oburursel Rotary, on some aircraft a captured Le Rhône, and on later machines a Goebel Goe, was of comparatively large diameter. It was three-quarters covered by a cowling which in turn was faired back into the sides of the rectangular sectioned fuselage by a pair of semicircular sectioned plywood fairings which tapered uniformly from full fuselage depth at the rear of the cowling to zero at a point just aft of the cockpit. A similar plywood section was used as a fairing behind the cockpit. The fuselage decking in front of the cockpit comprised three shaped aluminium panels.

The lower wing was clamped into a slot below the fuselage. The middle wing was clamped into sockets on either side of the upper fuselage, the top wing being carried on struts above the fuselage. The wings were of the same fundamental chord and section but varied in span with the upper being largest and the lower smallest. The upper wings carried balanced ailerons and the centre wing had a

semicircular cut out at its root to enhance the pilot's downwards and forwards vision. The lower wing was of uniform chord throughout its length.

The structure of the wings was based on a closely positioned pair of main spars which, by being joined top and bottom with a span-wise plywood strip became a very substantial box section. On to this were slid the wing ribs which were held in place by metal plates and further connected at their rear by a small square sectioned wooden strip which ran the complete span. The leading edge of the wing was covered with plywood capping which was angled back between the ribs to the front of the main spar to which it was pinned. The tips of the wings were given a rounded appearance by the use of a wing rib turned on to its side. The trailing edge was a tensioned steel wire which passed through metal guides at the extremity of the ribs. The ailerons were of simple tubular construction and were operated by control wires which passed into the wing and ran internally on a pulley system to the centre section where they emerged to pass through the fuselage decking to their connections on the control column. Access to these pulleys and the wires was by means of four panels in the undersurface of the wing.

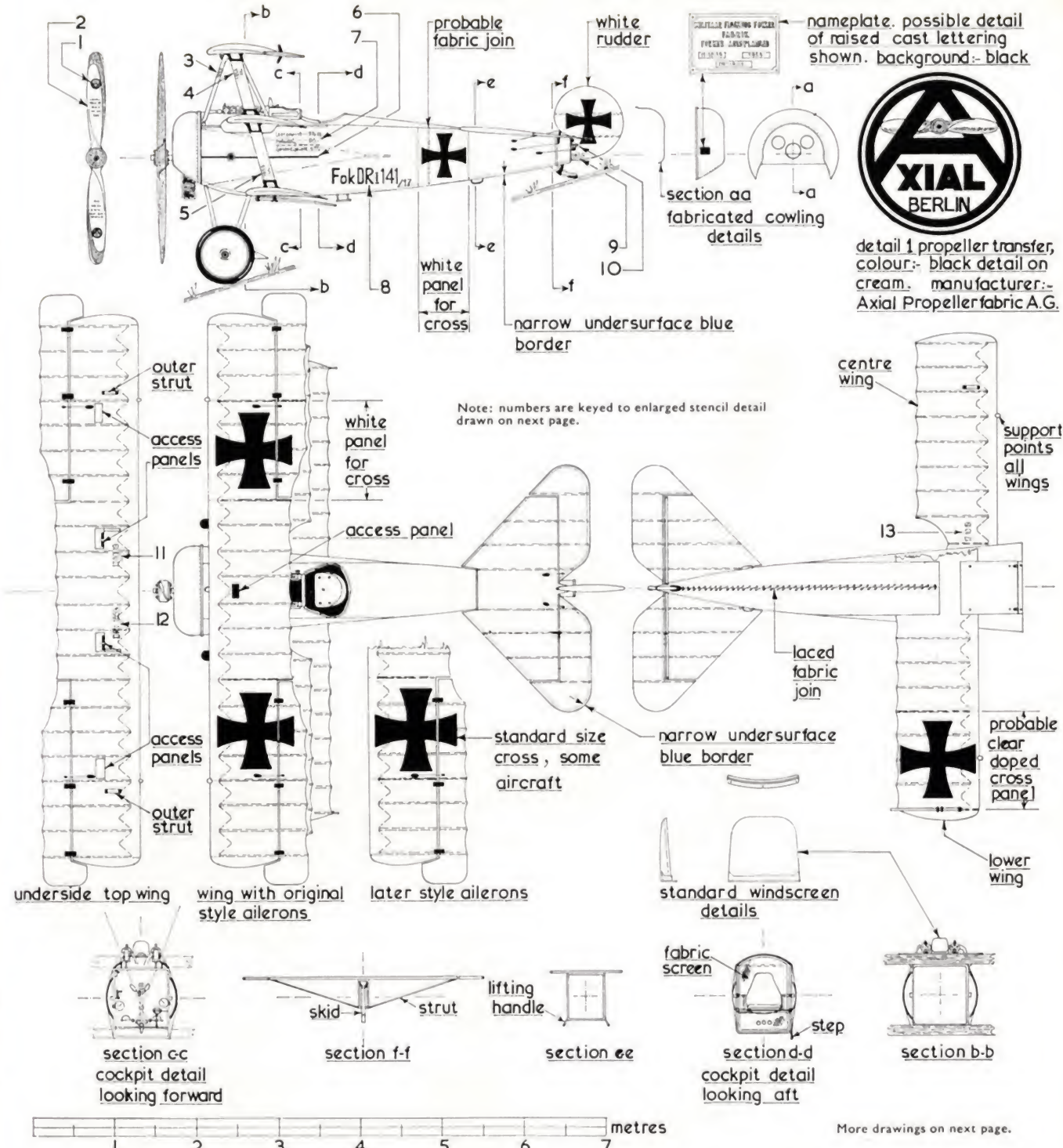
The top wing was supported at the centre by a pair of inverted 'vee' struts made in welded steel tube. The lower ends being clamped to the top fuselage longeron and the upper ends clamped to the main spar. The assembly was rigged with tensioned steel wires. The three wings were also joined near their extremities by a pair of 'struts'. These were struts in name only as the wing structure was strong enough not to need any additional bracing. However, in that condition the wings were subjected to considerable flexure which could, it would seem, alarm even experienced pilots. So the 'struts' were fitted to production machines. These again were clamped to the main spars and being separate units did not pass through the wing. There were no external bracing wires in the wing system other than at the centre section.

The tail surfaces were of simple tubular construction and of narrow thickness. There was no vertical fin and the familiar Fokker 'comma' shaped rudder was hinged from the rear fuselage member. The tailplane was clamped down to the fuselage top frame and carried the balanced elevator.

The undercarriage, like the centre section struts, was built up from steel tube welded to form a 'vee' shape. These were clamped at the fuselage and at their extremity, they carried the undercarriage axle which was simultaneously fastened and sprung by being bound with elasticated cord. Access for maintenance was nil, as the strut ends axle and cords were encased in the airfoil sectioned fairing which characterised Fokker aircraft of this period.

With the exception of the upper and lower nose panels the entire framework was covered with a fairly lightweight linen. (It weighed 3.5 oz per sq yd against the standard British linen which weighed

Continued on page 506



Below: A DR1, possibly 113/17, crashed in Houthoult Forest in October 1917. Angled streaks on upper surfaces can be seen as also can stencilling on strut. (Imperial War Museum).



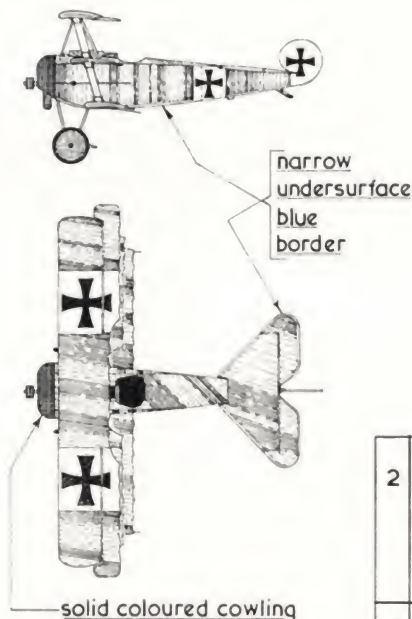
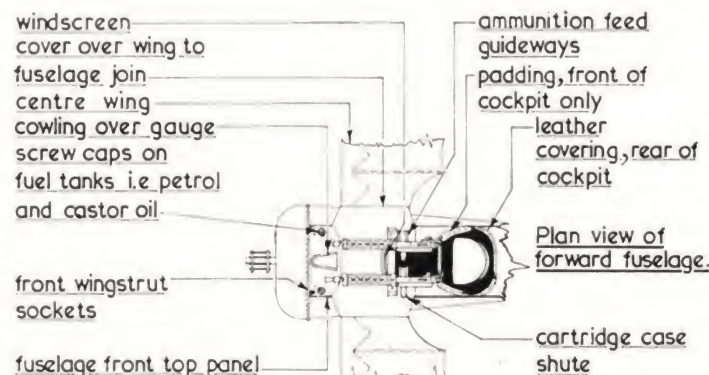


DIAGRAM OF TYPICAL
UPPER SURFACE COLOUR
STREAKING EFFECT.

Note: for precise positioning of enlarged stencil detail shown in panel on right, refer to number key and locate in drawings on previous page.



2	5114 AXIAL BERLIN JJDFSGBRHNE D26 EJB TP58	marking stamped on both blades of propeller, reads from tips	8	Fok DR1 141/17	
3	1853	werke number, (white)	9	1853	
4	1853 OL left strut, 1853 OR right strut		10	Fokker DR1	all of this detail in black
5	1853 UL left strut, 1853 UR right strut		11	17.10.19	
6	black centre line, both sides of fuselage		12	DR1 1853	
7	Leergewicht. — 376 kg Nutzlast. — 195 .. Gesamt Gewicht. — 571 ..	weight table black on left side of fuselage only	13	as 11 above	
DETAILS OF TYPICAL MANUFACTURERS STENCILLING ON PRODUCTION A/C					

4 oz per sq yd). The exact manner of covering is not known but it is known that the fuselage was covered in widths of fabric which ran vertically (ie, not lengthwise). Proof of this may be seen in most photos which show the machine's rear fuselage, and in the painting of the front arm of the cross. The division shows quite clearly as a straight vertical line with a difference of 'tone' on either side of it. This is depicted in the accompanying drawings.

It has been suggested that the fuselage was covered with six widths of fabric but there is no confirmation of this available. The fuselage fabric passed over the plywood fairings but as it was not stuck to their surface did not follow their contours and thus gave a smoother appearance than would otherwise have been achieved. One laced joint only was apparent and this ran the entire length of the fuselage undersurface. This also is shown in the drawings.

The wings were covered with a similar fabric which was tacked and glued to the ribs using flat headed pins which were then covered with glued-on rib tapes, the width of these tapes being about 8 mm.

The method used to cover the tail surfaces is not clear but it can be assumed that these items, and also the ailerons, were each covered in one piece. Also that any seams were on the hidden edges (ie, between tailplane and elevator).

Finishing—Production Aircraft

We now have the basic aircraft with its airframe covered with fabric and can see how the finish was applied. Those readers familiar with flying models will know that the covering must be made airtight to give it a satisfactory 'lift'. In the case of the Triplane this was done with a single coat of clear dope overall. The upper surface may, in fact, have had a second coat but this is doubtful. Colour was then applied to the top surface as a wash and it is apparent that this comprised a linseed oil varnish acting as a base to which was added dark olive brown pigment (see colour chart).

It would seem from the appearance of the fabric that this pigment was basically insoluble in the varnish. The mixture was applied to the various surfaces using a hand brush in single long strokes, the length of a brush stroke being the width of the component being

painted. There is no evidence of brushing out or back strokes. It would seem that the brush was not replenished at each stroke but was used for consecutive strokes until near dry. This method gave rise to the streaked appearance of all Fokker Triplanes. From examination of the fabrics it would seem that the brush used was probably 8 cm wide as this is the apparent width of the streak cycles. It will be seen from photos that the streaks were not directly chordwise on wings and tailplane but were angled by different amounts. This may have been a deliberate attempt to give a disrupted appearance to the assembled aircraft and this put an enemy pilot off his aim.

The aircraft's undersurfaces were almost certainly painted after the top and side surfaces, witness to this being the narrow line of undersurface colour which is visible along the fuselage bottom and on top of the tailplane. The colour join on the wings was midway between leading edge and wing tips. The undersurface colour was a turquoise blue as given in the colour chart. Unlike the top surface colouring, this was a solid colour and covered completely the colour of the underlaying fabric. It was added in the form of solution of dope plus pigment and in this case appears to have been completely soluble. When dry it was overpainted with a coat of lightly pigmented linseed oil varnish. Both surfaces had a semi gloss appearance.

Painting of various sub items did vary slightly and, for example, the wing struts were on occasion either natural varnished wood, undersurface blue or top surface olive brown. Undercarriage and centre section struts were normally olive brown. Wheel discs were also usually this colour but on occasion were blue. The standard colour of the engine cowling is not positively known but it is fairly certain that this was also olive brown. Whatever colour it was, it was dense and the metal was completely covered with no streaking.

The national insignia, normally of sub standard size, were applied as shown to white panels above the wings and on the fuselage sides. The rudder was normally all white and the cross was painted on to this. The underwing cross poses a problem in that it has always been assumed that this was painted, not on to a white panel, but, directly

as a black cross on to the blue undersurface. Recent evidence indicates that whilst this may have been true of some machines others in factory finish carried their underwing cross on a clear varnished fabric panel. An example of this was DR1 187/17 of Jasta 27.

The drawings show the known stencilled details which were applied to the various parts of the airframe. All of these have been studied at length on original photographs and are authenticated with the exception of that shown in Details 11 and 13. It will be appreciated that these numbers varied from aircraft to aircraft and this particular detail was taken from the photo of 187/17 on which aircraft it could be read as '10.12.19'. This would tally with the acceptance date for the aircraft except that the final figure would be '17' (ie, 1917) and not '19'. The transfer shown on the propeller is authentic in position size and detail. Transfers like this can be seen in most front views of Fokker Triplanes, it would, of course, become less distinct with service. The other propeller detail was stamped by hand into the wood and wasn't completely regular. It wasn't entirely legible on the source photographs but is drawn as closely as possible. There are some interpretations in the fourth or longest line.

The only other area of doubt concerns the cast nameplate which appears on the right hand side of the engine cowling. The details shown are a possible interpretation of the lettering thereon. However, right or wrong, the grouping of the letters is as it appeared, three words on the top line, one in the next, and two in the line below that. Below the lettering were three raised panels which would have been stamped with information relevant to this aircraft. Thus for DR1 141/17 this could have included the serial number 'DR1 141/17', the works number '1853', and the acceptance date.

Cockpit interiors were sparsely furnished but none the less cramped. There was no instrument panel at all, and what instruments there were were clamped low down on the fuselage vertical members so that they could be read with a quick glance downwards. The exception to this was a dial which was situated directly behind the engine cowling and protruded slightly through the fuselage decking. This faced rearwards and was streamlined with a metal fairing. The exact purpose of this gauge is not known but was probably a pressure gauge for engine oil. A marine type compass was mounted on a gimbal carried on a tubular column from the cockpit floor to the right of the pilot's seat. The seat was an aluminium 'bucket' mounted on a tubular steel frame which, clamped to the fuselage members, allowed it to be adjusted for height. The rear of the fuselage was screened from the cockpit by a sheet of fabric laced into position behind the pilot's seat. This had three circular holes in its lower half allowing control cables to run through it. The interior colour of the cockpit would be an off white or pale cream, the colour of doped fabric.

The other detail worthy of comment is the windscreen. This has previously been omitted from most, if not all, previously published scale drawings of the type. Why this should be is not understood, as it is clearly visible on many diverse photographs of Triplanes. The screen drawn fits in with position, size and shape indicated on these photographs. It may well be that it was not fitted to all Triplanes and it is quite likely to have been removed from others; however, it was a factory fitting to many aircraft.

Colour chart for Fokker Triplanes; based on fabrics from DR1 144/17 using 'Methuen Handbook of Colour' notation and Humbrol paints

Surface	Colour Name	Methuen Reference	Munsell Equiv.	Humbrol Mixture (By parts)	Remarks
All upper surfaces as given	Olive Brown	4F5	6.5Y/3.4/2.7	Use 'RFC GRN' number HB15, no mixing required	This applies to the dark areas. Light areas to come from brush strokes
All lower surfaces as given	Turquoise	25C5	8.5 BG/6.1/2.9	4 white (any) 8 blue HG 10 1 GRN 38	This colour is 'Solid', ie, NO streaking

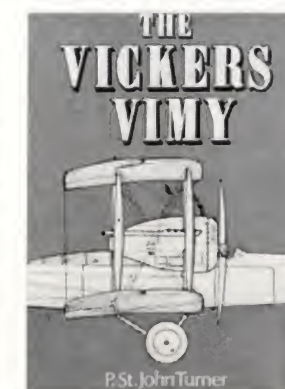
When dried and transfers/markings have been applied, give final coat semi matt clear varnish overall.

To be continued)

Commemorating the 50th Anniversary of the first non-stop crossing by air of the Atlantic Ocean by Alcock and Brown THE VICKERS VIMY

by P. St John Turner

JUST PUBLISHED



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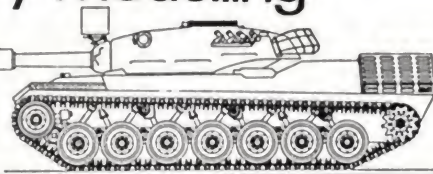
(Block caps please) (7/69)

* Delete as necessary

Military Modelling

by

Chris Ellis



AUSTIN TRUCKS

RELLEASE of the RAF Emergency Set by Airfix means that the military modeller now has a rich source of material for making a whole series of army trucks for wargames or military model collections.

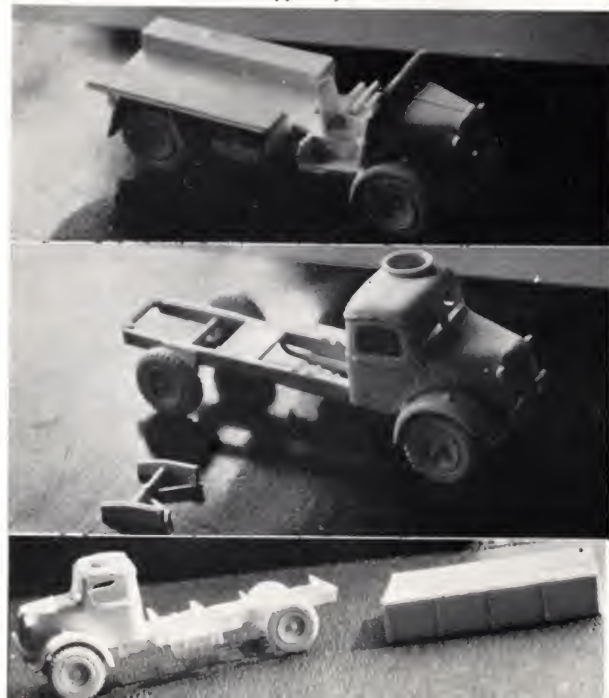
Here are two of the easiest which will find an instant use in any model army—the 30 cwt K2 truck and the 3 ton K2 truck, both quite widely used (along with Bedford and Ford equivalents) in World War 2.

Though my drawings show the basic work required, I strongly commend the excellent 1:76 scale drawings (Nos 53 and 56 respectively) of these two vehicles published by J. B. Church, Honeywood, Middle Road, Tiptoe, Lymington SO4 0FX, which cost 1s 6d each (including postage) and show all details needed for the models.

Of the two models shown here, the K2 30 cwt truck is by far the easiest since it has the same chassis as the ambulance but with a GS truck body. Chassis and front end assembly follow the kit instructions except that the windscreen is cut off and a second seat (without a back) is added in the cab.

The K2 3 ton truck is a little more difficult and one or two 'liberties' are needed which depart slightly from scale, but not from appearance. First of all, the K6 chassis (part 3 in the kit) is cranked at the rear though should be straight for the K2. I overcame this by leaving the chassis cranked (sloping up slightly towards the rear) and progressively reducing the depth of the transverse body supports towards the rear so that the body remained horizontal. The K6 cab is used (which is slightly too narrow) but the radiator is from an ambulance in a second kit. As this is shallower than the depth of the bonnet, it is necessary to fill the gap at the bottom with plastic putty. The mudguard section also comes from a second ambulance.

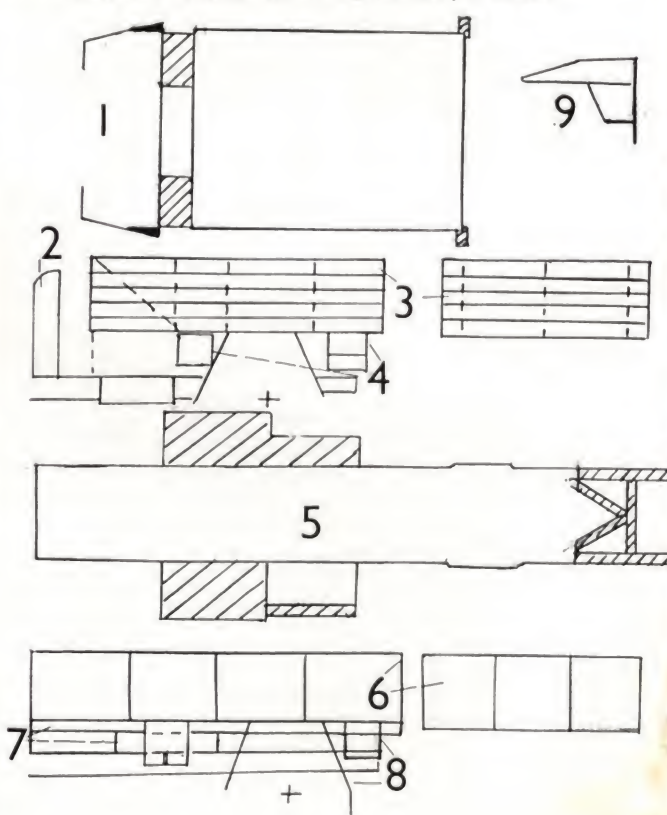
Below, top to bottom: Modified K2 chassis for 30 cwt GS body. The 3 ton model with modified K6 chassis and section removed from rear. The 3 ton chassis with supports added and body inverted with longitudinal supports just visible.



Top: Completed model of K2 30 cwt truck. **Above:** K2 3 ton truck.

Note the addition of plastic card foot boards. Slight gap between K6 bonnet and K2 mudguards in this conversion is easily filled with plastic putty. Keep all spare parts for future conversions.

Key to diagrams below: (Work in number order; items 1-4 and 9 refer to the K2 30 cwt truck and items 5-8 refer to the K2 3 ton truck). (1) Modifications to ambulance body floor (kit part A1)—remove shaded parts and cab corners marked in solid black. (2) Cab rear from plastic card—sides as shown and rear plate cut to cab width. (3) Body sides, front, rear, bottom, cut from 20 thou plastic card; score in planking; strapping (from thin paper) shown dotted. Cement body direct to ambulance floor. (4) Add final details; tool box and water container rack from scrap. (9) Optional canvas cab roof; make from plastic card covered loosely with thick tissue paper. (5) Chassis modifications for 3 ton truck; remove shaded parts. (6) Make up body sides, front, rear from 20 thou plastic card with outside framing from Micro-strip or thick paper strips. (7) Add longitudinal supports under body, same distance apart as rear body outer framing. Then add transverse supports to chassis top. (8) Add details—mudguards, footboards under cab, petrol tank on right side, toolbox on left, and water container rack, all from scrap. All drawings full-size for models.



photoPAGE

More rare pictures from readers with captions by Michael J. F. Bowyer. A free Airfix kit is awarded for every picture published, but please note that there is usually a delay of some months before publication due to the limited space at our disposal.

Key: (1) A delightful view of Boulton & Paul Overstrand K4561:U of 101 Sqn. Silver finish with black serials. (2) An equally pleasant view of L1145, a Blenheim I of 57 Sqn, vintage 1938, showing the squadron badge on the fin.



Key: (3) Much useful detail can be seen in this front view of Hurricane I L1550 of 111 Sqn used from December 1937 to mid 1938. Note silver undersides and the absence of yellow tips to the two-bladed prop. (4) Squadron emblem painted on the rear turret of the Virginia shown in picture 9. All these photographs by R. Gascoigne.



Key: (5) Another Blenheim I, K7103 of No 30 Sqn, on January 13 1938, the day it arrived at Habbaniya, Iraq, the first Blenheim in the squadron. Squadron markings were yet to be applied. Note size of underwing serials and the bomb racks under the fuselage. Photo by P. J. Rushforth. (6) Lodestar transport P:AX8?? in the Middle East, 1941. Standard green-earth-sky finish. (7) Dornier Do 17 of the Yugoslav Air Force after its escape from Yugoslavia, 1941, still in Yugoslav markings. (8) Desert-worn Lysander P9051 with tropical filter and 'open' spats in the Western Desert, late 1942. Pictures by R. Wood.



Key: (9) Vickers Virginia 'M' of No 10 Sqn, K2???, in standard mid-thirties bomber finish. Picture by R. Gascoigne. (10) Wellington Ic R1290:Y in the Middle East, 1941, with the yellow outer of its pre-war roundel painted out and the centre similarly altered. Picture by R. Wood.



July, 1969

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NEW KITS AND MODELS

1:32 SCALE WILDCAT

REVELL'S latest offering in 1:32 scale is a Grumman F4F-4 Wildcat. To say the least this is a magnificently moulded kit. Having available models in both 1:72 and 1:48 scales of this type one can readily appreciate the work that has gone into this one. Cockpit and panel detail is exceptionally fine and well thought out. All of the parts fit well together and the kit is moulded in a dark blue plastic.

One can argue that there is no future in a manufacturer producing such large scale kits because the average modeller cannot afford the space to have a comprehensive collection of such types. However, there must be many modellers who, having a collection in 1:72 scale, yearn for a model which can give them more detail. They may only make one but after having satisfied their desires the model becomes a showpiece for the sideboard or den.

Working on these arguments one can see a ready, if not excessive, sale for models in the larger scale. If the manufacturers keep up the very high standard of detail necessary and at the same time make assembly simple enough to be achieved by modellers without a great deal of experience, then there is no reason why this scale should not become as popular as the other two.

The Wildcat has 60 parts. Great attention has been paid to the complicated struts that make up the undercarriage of this aircraft but surprisingly this has not been made to retract. Alternative parts are provided for putting the gear up or down. Similarly, we find it rather surprising that the elevators, rudder and ailerons do not move, but provision is made for the wings to fold. Transparencies are beautifully clear and the cockpit can be made to slide. Removable panels are left so that the area of the cowling surrounding the engine can be exposed.

This is an extremely nice kit with many potentials for the conversion enthusiast either to make more parts movable or alternatively change the markings and paint scheme. Because of its superb detail it will obviously be popular. The price is 15s 11d. *A.W.H.*

ITALIAN FIGHTER

ARTIPLAST, the Italian manufacturer, has recently put on the market a 1:50 scale model of the Fiat G.55 Centauro. Moulded in light grey plastic this kit has 31 parts on which the detailing is slightly heavy. Apart from this it appears to be accurate in outline though suffers, in the

example which we were sent, with excessive flash. The decal sheet, which is in shiny finish, represents an aircraft which saw service on the Allied side after the Italian collapse in the second world war.

This is a fairly straightforward kit which is easily assembled and capable of being transformed into a pleasing model. Supplies are available from M. Hodde, Tussenmeer 250, Amsterdam, W3. Mr Hodde can supply these Artioplast models (and many Japanese kits) at very reasonable sterling prices. Contact him for further details. *A.W.H.*

EAST GERMAN MODEL

ALSO available from M. Hodde in Amsterdam, is an East German 1:100 scale model of the 11-18. We first reviewed this kit some time ago but it is worthy of mention as the moulds appear to have been cleaned up a little and the excessive flash



Three nicely detailed kits just released by Revell which should appeal to warship enthusiasts are, top to bottom, USS Long Beach (1:480 scale), USS Forest Sherman (1:313), and USS Boston (1:480). Priced at 13s 9d each, all are to a very high standard. Our only criticism is of the 'bastard' scales adopted for some otherwise appealing models. Of the three, perhaps, Forest Sherman is best and is quite near to the 'standard' ship scale of 1:300.

which appeared on the previous kit we reviewed has been removed.

Moulded in white, black and silver plastic, this kit is of reasonable accuracy. No transparencies for the cockpit or fuselage windows are provided but a keen modeller will not be put off by their absence.

Generally speaking the model is well made though on the heavy side. Detail is notable by its absence but the kit can be modified to make a reasonable addition to a collection of civil aircraft models. A large piece of Plasticine is provided for weighting the nose and there are 38 parts in the kit. The transfer sheet is very poor indeed and should be discarded on sight. The price of the kit is 14s 6d. *A.W.H.*

DO 17Z FROM MONOGRAM

THIS superb kit takes our 'Oscar' for the month. Following other excellent examples of model making by this manufacturer such as the Bearcat, Tigercat, B-52 and P-51B Mustang, the Dornier 17 will be a model which all 1:72 scale aircraft collectors will want to get immediately.

We have rarely seen such accuracy in mould making. All of the parts click together almost without the aid of cement! Accuracy is likewise amongst the best we have seen, and great care has been taken by Monogram to ensure that panel lines are not obtrusive. The undercarriage legs are not overscale, and even the tread on the tyres has been included. There are no gimmicks such as movable flying surfaces or retracting undercarriages. The decal sheet provides two alternative sets of markings and the cockpit transparencies are beautifully made. In this respect it will be necessary for the modeller to paint the interior detail of the Dornier 17 carefully because the transparencies are so clear that a quick coat of black will not suffice.

There are 46 parts in the kit moulded in dark green plastic. The price is 23s 9d and our sample came from Modeltoys of Portsmouth who have stocks. *A.W.H.*

NEW TRANSFERS

THE Danish manufacturer, Stoppel Decals, have this month provided eight sheets of chequers and stars in varying colours.

In five sizes of square, printed on different backgrounds, these transfers which also include a large area of solid colour, will be most useful to the individual modeller wishing to make for

Continued on page 512

AIRFIX magazine

MODEL TOYS

PLASTIC KIT SPECIALISTS—ASSOCIATE MEMBER I.P.M.S.

1/72 SCALE ALIPLAST

FIAT G55 "CENTAURO."



We cannot give an exact arrival date, as we know from past experience that time spent during transportation can vary, but we expect to have these in stock by late June or early July.

MONOGRAM

Dornier DO-17Z	1/72	23/9
ME. Bf109E	1/72	15/6
D.A.I.-E Skyraider	1/72	15/6
G.F7F-3 Tigercat	1/72	15/6
G.H.U.-16B Albatross	1/72	23/9
B-52D Stratofortress	1/72	23/9
P-51B Mustang	1/72	11/3
G.F8F Bearcat	1/72	11/3
Curtiss F11C-2 biplane	1/72	11/3
Boeing F4B-4 biplane	1/72	11/3
Curtiss P-6E biplane	1/72	11/3
H. Typhoon Mk. 1b	1/48	23/9
P-51B Mustang	1/48	15/6
F.W. 190 short nose	1/48	15/6
N.A.T.-28D	1/48	15/6
H. Hurricane II	1/48	23/9
JU-87G	1/48	23/9
P-47D Thunderbolt	1/48	23/9
OS2U-3 Kingfisher	1/48	23/9
Mosquito Mk. II/IV/V	1/48	32/-
P-38J Lightning	1/48	32/-
P-51D Mustang	1/32	32/-

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 4. Fleet Air Arm
 5. R.A.F. Overseas Theatres
 6. French Air Force
 7. Italian Air Force
 8. Japanese Air Force
 9. U.S.A.F. Vietnam cam.
 10. Military Vehicles
 11. Naval Vessels
 12. World War I Aircraft
 21. Combat Uniforms
 22. Ceremonial Uniforms
 23. Military Equipment (old)

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H. Hurricane IIc	1/72	3/-
S. Spitfire IA, VA	1/72	3/-
B. Beaufort II	1/72	4/3
W. Lysander	1/72	4/3
JU-87G	1/72	4/3
P-38J/L Lightning	1/72	4/3
B. Blenheim Mk. I/IF	1/72	6/-
Beaufighter NF1, F6C, TF10	1/72	6/-
BAC Lightning 6	1/72	7/6
Phantom F4K/M	1/72	7/6
F-105D Thunderchief	1/72	7/6
G.A.-6A Intruder	1/72	9/6
A. Shackleton MR.3	1/72	19/11
B-8-47 Stratojet	1/72	49/6

INPACT

Gloster Gladiator	1/48	9/-
Fairy Flycatcher	1/48	9/-
Hawker Fury	1/48	9/-
Bristol Bulldog	1/48	9/-

AOSIMA

Ki-100	1/72	5/-
A7M Reppu (Sam)	1/72	5/-
C6M1 Saiun (Myrt)	1/72	5/-
Shiun (Norm) F/plane	1/72	5/-

FUJIMI

Westland Wasp Hel.	1/50	13/6
A-4E Skyhawk	1/50	17/6

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- American Fighters of WWII, Vol. 1, features: P-39 Airacobra, Boeing P-26, F4F Wildcat, F6F Hellcat, P-38 Lightning, P-51 Mustang and P-61.
- Luftwaffe Fighters of WWII, Vol. 1, features: ME. Bf109, all marks, ME. Bf110, including night fighters, ME. 210, ME. 410, ME. 163, ME. 262.
- Luftwaffe Bombers of WWII, Vol. 1, covers: Dornier 17, Heinkel 111, JU-88 and FW-200 Condor.

AURORA

Fokker D-VII I	1/48	13/6
Curtiss P-6E biplane	1/48	13/6
Pfalz D-3	1/48	13/6
Albatross C-3	1/48	13/6
Breguet 14	1/48	13/6
Halberstadt CL-11	1/48	13/6
Fokker Eindekker	1/48	13/6
Sopwith Camel	1/48	13/6
Avro CF-100	1/70	13/6
X-18 Tilt-wing exp.	1/70	13/6

REVELL

B. Buffalo	1/72	3/-
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Boeing P-26	1/72	3/-
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All Revell WW.I kits	1/72	3/-
B-26 Marauder	1/72	9/9
Heinkel HE-219 Owl	1/72	9/9
N.A.B.-25 Mitchell	1/48	19/6
G.F4F-4 Wildcat	1/32	15/6

NEW NITTO motorised AFV KIT.

Alligator L.V.T.(A)5	1/35	39/11
Landing vehicle		

AFV kits from Airfix, Tamiya, Nitto, Nichimo, Otaki, Crown etc.

MODELDECAL

We feel we have said enough for the time being about this first issue in this new decal range, and anyway, we have had more said for us in the many magazine reviews published recently, than we would have dared to claim ourselves, for fear of being considered too smug.



RAF BAC Lightnings. 1/72 scale

Content:
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F.Mk2. XN778 "P" 19 SQN.
F.Mk6. XR764 "P" 5 SQN.
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New Kits—continued

example, a collection of RAF post war fighter aircraft, for second world war American fighters.

The stars also come in five sizes, and here too one can think of a great number of uses to which they can be put.

Colours come in red and white, black and red, black and white, black and yellow, red and yellow, blue and white, blue and red, and green and yellow.

Perhaps the most interesting and indeed the most useful of all the sheets printed by Stoppel this month is No 39 in the series which has two large areas of dayglo colour. Getting a good representation of dayglo is sometimes very difficult for the average modeller and this transfer will be of exceptional use. Two colours are printed, a light orange and a pink shade of red; typical of dayglo when slightly faded by the sun. This will indeed be of great use in an infinite variety of ways. The price of each sheet is 12s 6d and supplies are available at the principal model retailers including Modeltoys of Portsmouth. *A.W.H.*

CHIEFTAIN BY IMAI

ONE Japanese kit manufacturer whose tank models have not previously come our way is Imai. From what we've seen in shop windows, however, Imai tank kits do not match the quality (or accuracy) of Tamiya or Nichimo. Probably



Above: Attractive newcomer to the Corgi Toys range—better known for model cars—is this small scale replica of Concorde in BOAC colours. It is 7½ inches long and has a span of 3⅞ inches. Complete with display stand and 'droop snoot' which works, it costs 10s 6d and makes a splendid desk ornament. It is being produced in Air France colours for sale in France.

their best yet is a Chieftain in 1:50 scale which we have just had a chance to make, and this is well worth having if you collect the excellent, but limited, range of Aurora 1:48 scale kits. In several detail points, this Chieftain is inaccurate but not obtrusively so for this smaller scale—though in 1:35 scale it would be less acceptable. The suspension is greatly simplified but as it is hidden by the side skirts this really is of little consequence. With a few detail amendments—new aerials and a 'lagged' barrel in particular—the kit makes a worthy companion model for the Aurora range. Assembly is very easy, motorisation is similar to that of the Nichimo models reviewed above, and two penlight batteries (not supplied) provide the power. There is no steering—just on/off/reverse on the switch—but the performance is impressive for such a small model. The transfer sheet is only fair but the instructions—in English—are

good. Our sample came from Jones Bros of Chiswick, who holds stocks at 22s 6d each. *C.O.E.*

RECENT CARS

NEW Lesney Matchbox series releases offer several useful items for modelers, a particularly good one being a Case Bulldozer at 1:82 scale, just right to go with Airfix OO size soldiers or model railways. It is beautifully detailed and has a detachable cab. Another new Matchbox at 1:78 scale is an excellent US Ford heavy wreck truck. It comes in red and white with Esso transfers. At 1:92 scale (TT size) comes an eight wheel tipper truck, while new car models include a very fine VW 1500 'Beetle', replacing an earlier model and sealed at 1:59, plus a superb replica of the Lamborghini Muira to 1:60 scale which is nicely detailed and well worth having. All these models cost 2s 4d each from any hobby shop. *C.O.E.*

Letraset Transfers—a new series

READERS will remember that we reviewed some time ago the first samples of transfers produced by Alan Breeze in Canada using Letraset techniques. Since those first Luftwaffe markings, this enterprising manufacturer has gone on to print a set of RAF and Royal Navy markings which, combined with the distinct advantages offered by Letraset application, are without doubt the most sophisticated and accurate decals available to the model maker anywhere.

In justification of this rather sweeping statement we can say that having had several months to try out the markings we find that they not only overcome some of the built-in problems of the 'wet' method of traditional transfer application, but are bound to have ageing qualities not generally available from their contemporaries. Gone are the days when the model maker has to carefully trim round a letter to make sure that the carrier film does not show. Gone, too, are the ever-present problems of avoiding stain marks left on a well-painted surface by the Gum Arabic adhesive used in 'wet' transfers. Add to this top rate accuracy and the right sort of sheen and you have a sheet of transfers which, when applied, look just as if they have been painted on. Several model makers looking at examples we have produced recently, in fact, have sworn that the markings have been hand painted.

Having said all this—where do you get

samples? The Canadian address is 71 Thorncliffe Park, Apt 410, Toronto 17, Ontario. The British agent is Bryan Philpott, Brook Cottage, Bishops Green, Nr Newbury, Berks. Both trade and retail enquiries are invited but some of the better model shops should have adequate supplies shortly. The price of each set of transfers, which come in attractive folders, is 6s 6d. Included in the range are wing, fuselage, staffel codes, unit markings and kill markings for Luftwaffe aircraft, and in the RAF/RN range, pre-1941 and post-1941 roundels, different sets of squadron codes in a variety of colours, prototype markings, individual and squadron insignia and 'Royal Navy' lettering. So far, there are 16 different sets available.

The pleasure of being able to lay down a roundel even over the most oversize rivets on a fuselage or wing and see the marking mould itself completely to the surface is very gratifying, plus the fact that if a mistake is made the marking can easily be removed with Sellotape. This is just one more advantage over 'wet' transfers, where the model has to be almost entirely repainted if a mistake is made, allowing for the fact that the unwanted transfer may be difficult to get off in the first instance. So Letraset transfers are here to stay, we think!

In the eight sets of RAF markings which have just become available, we were delighted to see that the blue and

red of the upper wing markings was the most accurate we have yet seen, coming somewhere between the shiny new colours when the aircraft left the factory and the faded examples found on aircraft which had been in service for some time. Similarly, the outer yellow circle on fuselage roundels is just right and should delight even the harshest critic. Squadron code letters come in black, Sky, light grey and dark red. The red and black sheets contain smaller letters and numbers for serials. Sheet M12 contains prototype, kill and squadron markings with an explanatory insert giving details of which squadron or individual aircraft is represented.

We found that each marking has sufficient space around it to allow it to be cut from the sheet. The semi-tacky backing is just sufficient to hold the transfer on the model in the right place before rubbing a little more difficult to do but we found that by rubbing down on to a piece of 'wet' transfer, they stuck well and could be manipulated into awkward positions.

Future production in Canada will include many foreign air force insignia and such things as rescue and ejector seat markings. The manufacturers tell us that sales in the US and Canada have rocketed since the sheets were first introduced. In our own opinion, the same thing will happen with British modellers as soon as the potential of the new methods is accepted. *Alan W. Hall*

AIRFIX magazine

Letters to the Editor

74 Sqn colours

NOW that transfers for Lightnings are available in the different squadron markings, readers may be interested in the new fin colours on Lightnings belonging to 74 Squadron stationed at RAF Tengah. The fin is painted gloss black overall with the code letter in yellow, the 74 Squadron Tiger insignia, and the RAF flash slanting with yellow outline. All these details are on the 'standard' positions as shown in many published pictures. All the other markings are as before.

Edward Weber, RAF Tengah, Singapore.

Glasgow museums

MAY I draw the attention of your readers to two museums in Glasgow, worthy of a visit by model makers?

1. Kelvingrove Art Gallery and Museum which contains many fine ship models including *HMS Hood*, *Howe*, *Dido*, *Queen Mary* and *Cutty Sark*.

2. Glasgow Museum of Transport which contains samples of all types of tram car used in Glasgow, railway engines including Caledonian 123, veteran cars of Scottish origin, and various types of horse drawn vehicle.

Entry to both museums is free and they are open seven days a week.

I would recommend a visit to all those who are in the West of Scotland this year.

William B. Black, Glasgow, N.W.

Collishaw's career

IN the 'Camels of the Aces' article of the May 1969 edition I noticed a small fault. You said: 'Major Raymond Collishaw (which is mis-spelt; the name was Collishaw) built up the better part of his victory tally flying triplanes with 'Naval Three'. In fact Collishaw never flew triplanes with Naval Three. He first joined the squadron, which was flying 'Pups' at the time on Feb 1, 1917, and left after 2 months, during which time he destroyed only one enemy aircraft, to join No 10 (Naval) Squadron, which was flying triplanes, and commanded the famous 'Black Flight'. He then took 2 month's leave, took command of No 13 (Naval) Squadron, and on Jan 23, 1918, rejoined No 3 (Naval) squadron as commanding officer. This squadron was now flying Camels.

Simon Poe, Barnham, Sussex.

P1052 preserved

I READ with interest the article on the P1052 in the May 1969 AIRFIX magazine.

P1052 VX272, is painted in Royal Naval colours and now resides in the Station Museum, RAF Colerne. May I suggest that this RN finish could be another alternative for the model?

I would like to add that the Station Museum is open all day and every day during the week and anyone wishing to come and take photos of our P1052 and

July, 1969

Letters to the Editor selected for publication entitle the senders to each receive a free Airfix plastic construction kit of their choice. We are always pleased to receive your comments and pictures, which will be considered for publication. Submitted material and pictures can only be returned if accompanied by a stamped addressed envelope, and the Editor cannot accept responsibility for safe keeping of any such contributions, neither does he necessarily agree with comments expressed by correspondents in the letters columns. Please note that any letters anticipating a reply MUST be accompanied by a SAE or stamp.

the other aircraft we have in the Museum should just drop me a line and arrangements can be made. We also have the following aircraft in the Museum:

Type	Serial
Valetta C Mk 1	WD 159
Canberra B2	WJ 676
Meteor Mk 8	
(Prone position)	WK 935
Mosquito TT 35	TJ 138
Anson Mk 19	TX 226
Vampire Mk 3	VT 812
Vampire T11	XD 542
Hunter Mk 2	WN 907
Hunter Mk 3 (P1067)	WB 188
Sea Fury FB 11	VR 930
Me 162 (Salamander)	120227
Me 163 (Komet)	1910L
We also have a Flying Flea which I am now trying to reconstruct.	
Cpl D. P. Johnson, Station Museum, RAF Colerne, Chippenham, Wilts.	

Versatile table

READERS may be interested in hearing how my sons and I solved the problem of having two wars going on in our house at the same time. I refer to wargames with Airfix armies and the other War when the Head of the household wanted the dining room table for meals.

Our first wargames on the lounge carpet moved to the dining room table as our armies and knowledge increased. We enlarged the size of the table top by using two door panels, suitably battened together, laid on top. But all to no avail. Always at the moment of truth for some luckless General there came that command from the kitchen that sent battalions scampering back to their showcases. Obviously something had to be done.

I bought a sturdy old table with a 4 ft square top and screwed a 6 ft 6 in x 5 ft wide piece of blockboard to the top of the table. After shortening the table legs to allow for seated diners, I made a 6 inch high frame around the edges, screwing from underneath and at the corner joints. A removable top of blockboard 6 ft 8 in x 5 ft wide (to allow a handhold) completed the table. Four coats of PU 15 Allweather Polyurethane Dark Oak Varnish and we have a baronial dining table when the top is in position with undisturbed wargames remaining underneath.

As a change from playing wargames we convert Airfix models, some from AIRFIX

magazine articles and others from our library of books etc, to add to our collection of model soldiers displayed in picture framed display cases on the wargames room walls. Airfix models are ideal for making dioramas too. Last year when there was an exhibition in Selfridges for *The Charge of the Light Brigade* film we made a panorama of The Charge using 350 US Cavalrymen and British World War I Infantrymen converted into Lancers, Hussars and Russians.

Imagine our delight when Sir Richard Hull former Chief of the Imperial General Staff, who opened the exhibition and was a former CO of the 17/21st Lancers, asked us if we would give the panorama to the regiment. We of course agreed and it is now in the Regimental Museum in Belvoir Castle, Grantham, Lincs. We were then asked to do another diorama, to even the balance, of The Charge of the 21st Lancers at the Battle of Omdurman. We will have completed it this summer, complete with Sir Winston Churchill who took part as a subaltern in the 4th Hussars.

One final thing, when we turn our table top over we've got an Airfix Motorace layout!

Terence I. McDonald, London SW5.

'Fearless' details

HAVING just completed the Airfix model of the RN ship *HMS Fearless* I would like to point out that there is a serious mistake in the painting instructions. The waterline in this ship and her sister *HMS Intrepid* rears up towards the stern, apparently from the 20 foot draught mark forward to the 30 foot draught mark aft. This is to allow for a change of after draught of about 9-10 feet when working landing craft in the dock built into the stern of these ships. The result of this painting gives them an unusual appearance when in a normal sea going trim.

Malcolm K. Jamieson, Durban, South Africa

Emergency set

I WOULD first like to congratulate Airfix for their fine RAF emergency set. The markings and personnel differ from those featured in the 1968 Catalogue supplement, but these new markings are more accurate and the personnel detail is better. As a new reader, I would also like to offer my thanks to Chris Ellis for his excellent articles and to Peter Chamberlain and John Milsom on the articles Panzer III and T-34 story. These were most interesting.

I find a certain lack in military models in 1:76 scale and with the many armoured vehicles of the past and present, there could be some beautiful models produced mainly the Pz IV, Pz III and Cromwell from World War II, the T-10 and Chieftain from present day, and perhaps an A7V Sturmpanzerwagen and Whippet from World War I. The aircraft enthusiasts have craved for different aircraft and they got them. In the last two years or so, at least 25 aircraft kits have been introduced by

Letters—continued

Airfix; only two warships and two merchant ships have been introduced, and four AFVs. As you can see there is an appalling gap between aircraft AFV and ship production. Many AFV enthusiasts are sick of reading complaints from aircraft modellers because a certain aircraft hasn't been produced. They have enough aircraft kits as it is, and I think it's high time a few more AFVs were produced.

Also, for ship converters, the MV *Benledi* has two more sister ships, the MV *Benstac* and SS *Bencruachan*, a photo of which appears in the November 1968 *Marine News*. The SS *Bencruachan* has twin funnels, however, linked with a projecting forward crosspiece, which forms a radar platform.

John Bedigan, North Shields, Northumberland.

Matt black

I HAVE been reading AIRFIX magazine for more than 4 years and in that time I have not come across my method for producing a matt black finish applicable to British heavy bombers. My method provides a finish similar to the real thing. From accounts I have read the matt black finish was a sooty mixture.

To apply this in model form all that is needed is a supply of spirit black, a fine sieve and a suitable tacky varnish. The varnish must be applied thinly (otherwise it collects around rivets and spoils the effect) and is allowed to go tacky. Then the spirit black is sieved over the varnish until all the varnish is covered. Then it is left to dry and the excess spirit black blown or dusted off with a soft brush. The upper surfaces should be masked off before applying the camouflage black. Codes, roundels and serials are applied after the spirit black without danger of them not adhering.

V. Monahan, Plymouth, Devon.

Light colours

I WHOLEHEARTEDLY agree with Mr J. H. Palmer (May issue). It is extremely difficult to position a darkly coloured part less than $\frac{1}{4}$ inch long, although it is even harder to find a small dark part which falls off the working surface.

Of the two colours Mr Palmer suggests I would prefer silver, mainly because of a problem I have when simulating wear on aircraft walkways, etc. I normally paint the area to be worn, with silver paint before applying the proper paint scheme, then scraping away the top coat for the worn effect. However, to get a good finish a larger area than the worn patch has to be painted silver and the paint left immediately above it often turns out darker and metallic. Silver plastic would alleviate this problem.

At last after nine months of feverish waiting I was very glad to see the release of the excellent Airfix RAF Emergency Set (in white plastic), which I am sure will be well received by war gamers and others.

May I make a final request, I am trying to assemble a collection of model aircraft showing the history of 607 Sqn. Could any reader please supply me with information of aircraft codes and serials from 1930 onwards?

John H. Simpson, 13 Clarence Gdns, Bishop Auckland, Co Durham.



Reader A. Stokes of Woolton, Liverpool, sent us this view of his excellent 1:32 scale London horse bus which was made from an Airfix B type body using Britain's cart wheels, horses and figures. Body is in the authentic brown and white livery.

Lubricating plastic

AS a very recent reader of your excellent magazine I was interested to read a letter in the May issue on the lubrication of plastic moving parts. I have found dry lubrication by graphite to be quite successful and use an ordinary HB pencil. After first making sure that the parts move freely I pencil well the rubbing surfaces or using a pen knife scrape off a little graphite into the bearing cup.

Some three years ago I made a weather vane to go on the top of my garage using a Harvard Trainer. I assembled and painted the kit in the usual way graphiting the propeller shaft in the course of assembly and then finished off with two coats of clear varnish to protect the paint and decals from the weather. Many 'flying hours' were logged in all sorts of weather from 'light airs' to 'Force Ten' gales and the aircraft was only withdrawn from service after being 'jumped' by a marauding starling who made a vicious frontal attack breaking the airscrew and doing other minor damage. A replacement aircraft is now needed and it has been decided to allocate a more heavily armed multi-engined type—either a Halifax or Stirling—for the use of the Met Flight.

N. H. Fletcher, Bulwell, Nottingham.

Bronco finish

HAVING just completed my Airfix kit of the Bronco I was casting around for a slightly 'different' finish when I found on studying some USAF documentation that COIN (Counter insurgency) aircraft are now being painted in a comparatively new scheme.

Several COIN or Forward Control spotter aircraft were damaged by blast from the strike aircraft which they had called up and it seems that the strike pilots had nearly destroyed their guide because with Olive Drab camouflage his aircraft was 'lost' against the jungle terrain background. Hence they are now re-painting and applying to new aircraft an overall colour of Light Grey—although no Federal Standard colour chip yet exists for this (Grey FS595-36473). The shade is virtually identical to Non-Specular (matt) US Navy Light Gull Grey. This colour is only broken by the entire upper wing from tip to tip, including the section across the top of the fuselage, being painted in Non Specular (matt) White. Cockpit interiors are now Medium Grey—a shade not far

off RAF (Humbrol) Ocean Grey, while seats and consoles are black. Headrests are dull red leather and seat covering leather or cloth is dark green in most cases.

Unfortunately I have not found as yet an example of serials and markings for the new COIN finished Bronco but for the moment it appears that they carry all the various warning stencils etc as on the kit box-art plus the usual miniscule Vietnam area stars-and-bars insignia.

Wheel wells appear to be still painted white. Perhaps following this information an American reader can find photographs of a Bronco in this new scheme?

Robert C. Jones (Editor IPMS Magazine), Solihull, Warks.

White plastic

WITH reference to John Palmer's letter in the May edition of AIRFIX magazine I would like to say how much I agreed with him when he wrote about lighter coloured plastic, but would also like to mention that a month or two back I purchased the excellent Airfix Honda CB 450 model and much to my surprise, but needless to say to my delight, I found the parts were moulded in white, a colour which has no connection with the colour-scheme of Silver/Matt Black and Gloss Black. Possibly John Palmer's 'dream' is coming true. Let's hope this trait continues Airfix!

Glen Mobbs, Luton, Beds.

Useful figures

I RECENTLY purchased a packet of Hong Kong made figures, the label bearing the words '100 Cowboys and Indians'. It contained 50 mounted figures, and cost 2s.

I found that by using Airfix Roman heads and tops, reasonable Cavalry and mounted archers can be made without having to cannibalize my valuable Airfix US Cavalry. The bare-chested Indians carrying a spear and shield also make good Ancient Britons.

These figures are very useful and cheap. B. Ansell, Woodthorpe, Nottingham.

Tank tracks

I READ with interest B. Parker's letter on his motorised Tiger SP gun. He said that he had difficulty obtaining realistic tracks for his model. I find that metal link armbands make very strong and realistic tracks. They cost 2s 6d a pair.

Ricard Byrne, Chandlers Ford, Hants.

AIRFIX magazine

New Books—from page 483

important books, magazines, and military museums. In the latter respect we were amused to see AIRFIX magazine listed as 'primarily concerned with wargames', just about the only subject we barely touch as such!

Warship names

SHIPS OF THE ROYAL NAVY: Volume 1, MAJOR SHIPS, by J. J. Colledge. Published by David & Charles Ltd, South Devon House, Newton Abbot, Devon. Price 84s until January 1, 1970; then 105s.

THIS is an enormous book of over 600 pages which will be a valuable work of reference to warship enthusiasts. It lists all ships ever in service with the Royal Navy in brief 'telephone directory' style in alphabetical and chronological order. With each entry is included date of building, data on the vessel in 'shorthand' form, and other abbreviated details. There are 13,000 entries altogether and Volume 2 (to follow) will bring the tally to 24,000.

Due to the alphabetical style any ship name is easy to trace, and the research needed for compiling this work must have been prodigious. Many names are, of course, duplicated since the more famous names have been used time and time again. Thus ships named *Fortune* and *Greyhound*, taking two examples, occupy nearly a page for each list. This work will certainly find its way into a lot of public libraries. We feel that the addition of 8-16 pages of pictures of the more famous Royal Navy ships would have been worthwhile if only to encourage the customers. As it stands the book is something of a daunting visual prospect—like looking at a telephone directory—which may well discourage would-be purchasers. As a work of reference, however, this is a first-class publication.

Pigeon Loft—from page 494

Pigeon entrance

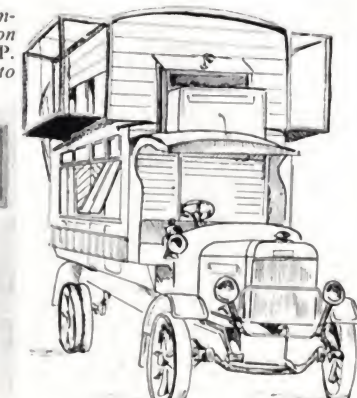
An opening 14 mm high \times 29 mm wide centrally placed is cut in the front upper deck. The sheltered entrance is made from 30 thou plastic sheet following the dimensions of the drawings.

The staircase can now be added per kit instructions and the roof can be put in place. The exact measurements will depend on the curvature of the front and rear panels. The few other details include the cab roof supports. The placing of these is shown in the photographs. I made mine from some on the unused handrail, suitably modified. A ladder which runs the length of the body sides can be constructed with 11 rungs. A pick and shovel are either scratch built or if the 'Ole Bill' kit was initially used they can be taken from this and attached to the upper deck rear panel.

Painting

The colour is a green/khaki mixed from Humbrol 30 and 26. The window frames, second and third window boardings, front cab boarding, and the pigeon entrance are all painted white. A number 2238 is added to the middle of the top rear panel. This number is white and $\frac{1}{4}$ inch high.

Below: Front view of completed model, showing pigeon cages in place (Photo by P. Buckoke). Right: Sketch to show general layout.



July, 1969

'Jane's' 1909

JANE'S ALL THE WORLD'S AIRSHIPS, 1909. Facsimile reprint. Published by David & Charles Ltd, South Devon House, Railway Station, Newton Abbot, Devon. Price 126s until January 1, 1970; then 147s.

FOLLOWING their previous highly successful 'Jane's' reprints, David & Charles have now brought out the very first edition of this famous book, dating from the days when 'air-ships' was thought a more appropriate title. Airships do, indeed, figure prominently but the book includes all flying craft which are covered in the traditional style, alphabetically by nations. This was one of the first books of the 'compendium' type covering aircraft, and for this reason there are more blank squares of the 'picture wanted' type than in subsequent editions. There is, nonetheless, the usual profuse collection of pictures and drawings plus data and notes on the hundreds of types described. There are more than 370 pages, but none of the traditional adverts because this was the first edition, which means presumably that advertisers were cautious about plunging into the new venture. Not the least interesting part of the book is the collection of assorted features at the back including 'The future of Dirigibles', 'The Political Aspects of Aviation', and 'Aerial Engineering'. Plenty of delightful prophecies.

The true enthusiast will find much of absorbing interest here—at a price well below that of the current 'Jane's' incidentally. There is a price discount for early purchasers. Those who can afford only one of these early editions, however, will probably find the 1913 volume (reviewed last April) the more useful, at least as far as model information goes.

Part 2 of 'Panzer Uniforms' will appear next month.

Carrier Story—from page 503

LMG were now designated Carriers, Bren, No 2, Marks I and II.

The pilot model of the Bren Carrier, a reworked Carrier MG No 2, Mk I, was converted by Thornycroft who with various other firms undertook production of this vehicle. Production was also begun in Australia and New Zealand by 1941 and ended in 1943 after a total of 5,501 machines had been built in these two countries. The Australian version was welded whereas those produced in Britain were of riveted construction.

Prior to the outbreak of the war, two variants of the carrier appeared, based on the Bren Carrier. These special variants were developed for the carrying of personnel and for reconnaissance. The Cavalry Carrier of which only 50 were built (by Nuffield) was designed to carry the dismounted personnel of the Cavalry light tank regiments in the mobile (mechanised) division. They had accommodation for the driver and six men but were armoured only in front. The Scout Carrier was very similar to the MG or Bren Carriers but carried either an extra man or a wireless set. These had a Boys anti-tank rifle mounted in the front, and sockets in the rear compartment for the Bren gun. These vehicles were designed for use with the infantry scout elements and reconnaissance troops in the mechanized divisional cavalry regiments, and their full designations were Carrier, Cavalry, Mark I and Carrier, Scout, Mark I. A third variant was developed soon after the outbreak of the war in 1939 for use with the Royal Artillery as an armoured observation post and known as Carrier, Armoured OP, Marks I and II.

Below: Experimental Carrier, Machine Gun was the link between the Light Dragon and subsequent machine gun carriers to be illustrated next month.



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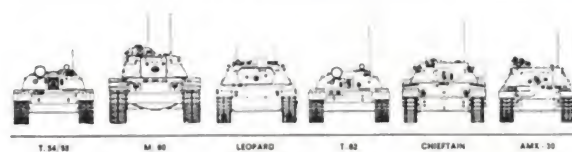
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"Air Classics" Magazine, November 1966 issue. Giuseppe Ghergo, Via Rosetani 7, 62100 Macerata, Italy.

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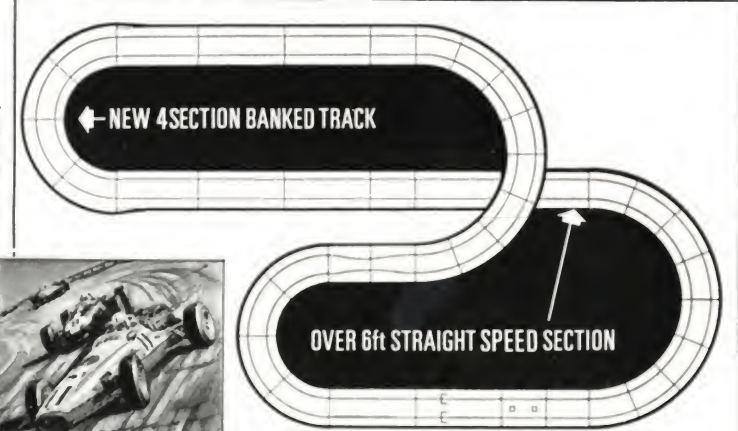
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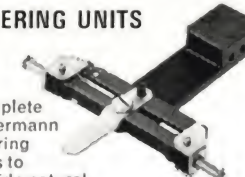
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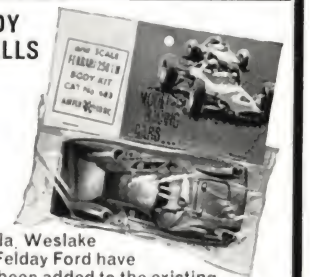
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